REAR TINE TILLER

Owner's Manual

Models

90102800 17" REAR TINE TILLER



GB ENGLISH

21547000 Rev. 1 03.18.09
Printed in USA

SAFETY RULES

Safe Operation Practices for Walk-Behind Powered Rotary Tillers

TRAINING

- Read the Owner's Manual carefully. Be thoroughly familiar with the controls and the proper use of the equipment. Know how to stop the unit and disengage the controls quickly.
- Never allow children to operate the equipment. Never allow adults to operate the equipment without proper instruction.
- Keep the area of operation clear of all persons, particularly small children, and pets.

PREPARATION

- Thoroughly inspect the area where the equipment is to be used and remove all foreign objects.
- Disengage all clutches and shift into neutral before starting the engine (motor).
- Do not operate the equipment without wearing adequate outer garments. Wear footwear that will improve footing on slippery surfaces.
- Handle fuel with care; it is highly flammable.
- Use an approved fuel container.
- Never add fuel to a running engine or hot engine.
- Fill fuel tank outdoors with extreme care. Never fill fuel tank indoors.
- Replace gasoline cap securely and clean up spilled fuel before restarting.
- Use extension cords and receptacles as specified by the manufacturer for all units with electric drive motors or electric starting motors.
- Never attempt to make any adjustments while the engine (motor) is running (except where specifically recommended by manufacturer).

OPERATION

- Do not put hands or feet near or under rotating parts.
- Exercise extreme caution when operating on or crossing gravel drives, walks, or roads. Stay alert for hidden hazards or traffic. Do not carry passengers.
- After striking a foreign object, stop the engine (motor), remove the wire from the spark plug, thoroughly inspect the tiller for any damage, and repair the damage before restarting and operating the tiller.
- Exercise caution to avoid slipping or falling.
- If the unit should start to vibrate abnormally, stop the engine (motor) and check immediately for the cause. Vibration is generally a warning of trouble.
- Stop the engine (motor) when leaving the operating position.
- Take all possible precautions when leaving the machine unattended. Disengage the tines, shift into neutral, and stop the engine.
- Before cleaning, repairing, or inspecting, shut off the engine and make certain all moving parts have stopped. Disconnect the spark plug wire, and keep the wire away from the plug to prevent accidental starting. Disconnect the cord on electric motors.
- Do not run the engine indoors; exhaust fumes are dangerous.
- Never operate the tiller without proper guards, plates, or other safety protective devices in place.
- Keep children and pets away.
- Do not overload the machine capacity by attempting to till too deep at too fast a rate.
- Never operate the machine at high speeds on slippery surfaces. Look behind and use care when backing.
- Never allow bystanders near the unit.
- Use only attachments and accessories approved by the manufacturer of the tiller.
- Never operate the tiller without good visibility or light.
- Be careful when tilling in hard ground. The tines may catch in the ground and propel the tiller forward. If this occurs, let go of the handlebars and do not restrain the machine.

MAINTENANCE AND STORAGE

- Keep machine, attachments, and accessories in safe working condition.
- Check shear pins, engine mounting bolts, and other bolts at frequent intervals for proper tightness to ensure the equipment is in safe working condition.
- Never store the machine with fuel in the fuel tank inside a building where ignition sources are present, such as hot water and space heaters, clothes dryers, and the like. Allow the engine to cool before storing in any enclosure.
- Always refer to the operator's guide instructions for important details if the tiller is to be stored for an extended period.

- IMPORTANT -

CAUTIONS, IMPORTANTS, AND NOTES ARE A MEANS OF ATTRACTING ATTENTION TO IMPORTANT OR CRITICAL INFORMATION IN THIS MANUAL.

IMPORTANT: USED TO ALERT YOU THAT THERE IS A POSSIBILITY OF DAMAGING THIS EQUIPMENT.

NOTE: Gives essential information that will aid you to better understand, incorporate, or execute a particular set of instructions.

Look for this symbol to point out important safety precautions. It means CAUTION!!! BECOME ALERT!!! YOUR SAFETY IS INVOLVED.

CAUTION: Always disconnect spark plug wire and place wire where it cannot contact spark plug in order to prevent accidental starting when setting up, transporting, adjusting or making repairs.

WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

PRODUCT SPECIFICATIONS

Gasoline Capacity:	3.6 Quarts (3.4L) Unleaded Regular
Oil (API-SG-SL): (Capacity: 20 oz./0.6L)	SAE 10w-30 (Above 32°F/0°C) SAE 5w-30 (Below 32°F/0°C)
Spark Plug: (Gap: .030"/0.76mm)	NGK BR-5HS (Champion RL86C)

CONGRATULATIONS on your purchase of a new tiller. It has been designed, engineered and manufactured to give you the best possible dependability and performance.

Should you experience any problems you cannot easily remedy, please contact your nearest authorized service center. We have competent, well-trained technicians and the proper tools to service or repair this unit.

Please read and retain this manual. The instructions will enable you to assemble and maintain your tiller properly. Always observe the "SAFETY RULES."

CUSTOMER RESPONSIBILITIES

- Read and observe the safety rules.
- Follow a regular schedule in maintaining, caring for and using your tiller.
- Follow instructions under "Maintenance" and "Storage" sections of this Manual.

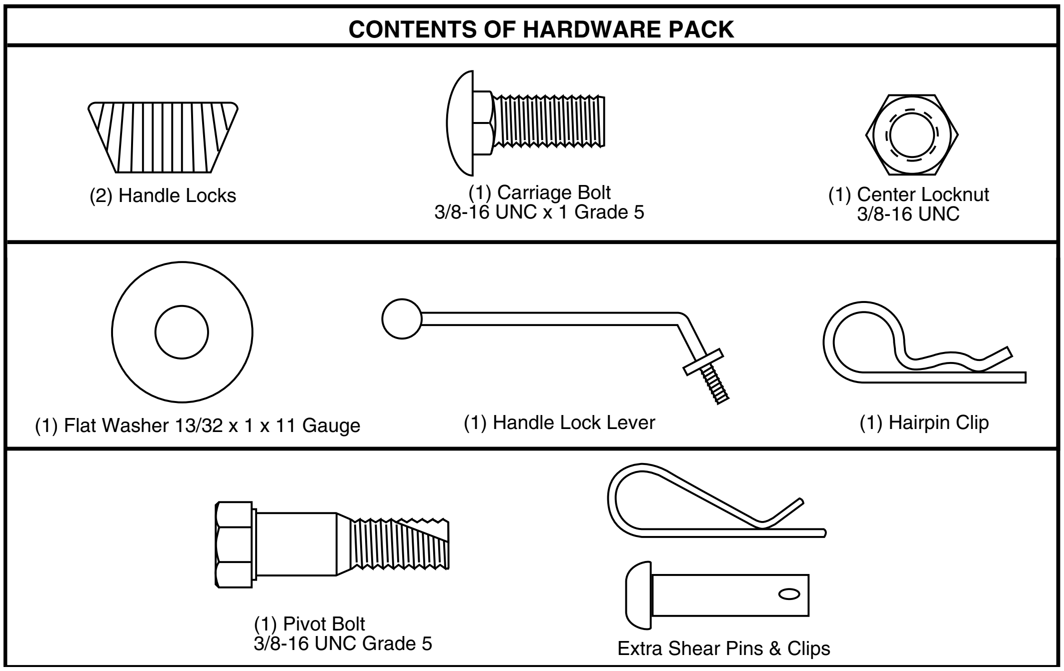
IMPORTANT: THIS UNIT IS EQUIPPED WITH AN INTERNAL COMBUSTION ENGINE AND SHOULD NOT BE USED ON OR NEAR ANY UNIMPROVED FOREST-COVERED, BRUSH-COVERED OR GRASS COVERED LAND UNLESS THE ENGINE'S EXHAUST SYSTEM IS EQUIPPED WITH A SPARK ARRESTER MEETING APPLICABLE LOCAL LAWS (IF ANY). IF A SPARK ARRESTER IS USED, IT SHOULD BE MAINTAINED IN EFFECTIVE WORKING ORDER BY THE OPERATOR.

IN THE STATE OF CALIFORNIA, A SPARK ARRESTER IS REQUIRED BY LAW (SECTION 4442 OF THE CALIFORNIA PUBLIC RESOURCES CODE). OTHER STATES MAY HAVE SIMILAR LAWS. FEDERAL LAWS APPLY ON FEDERAL LANDS. SEE YOUR AUTHORIZED SERVICE CENTER/DEPARTMENT FOR SPARK ARRESTER.

TABLE OF CONTENTS

ASSEMBLY

Your new tiller has been assembled at the factory with exception of those parts left unassembled for shipping purposes. To ensure safe and proper operation of your tiller all parts and hardware you assemble must be tightened securely. Use the correct tools as necessary to ensure proper tightness.



TOOLS REQUIRED FOR ASSEMBLY

A socket wrench set will make assembly easier. Standard wrench sizes are listed.

(1) Utility knife

(1) Tire pressure gauge

(1) Pair of pliers

(1) 9/16" wrench

OPERATOR'S POSITION (See Fig. 1)

When right or left hand is mentioned in this manual, it means when you are in the operating position (standing behind tiller handles).

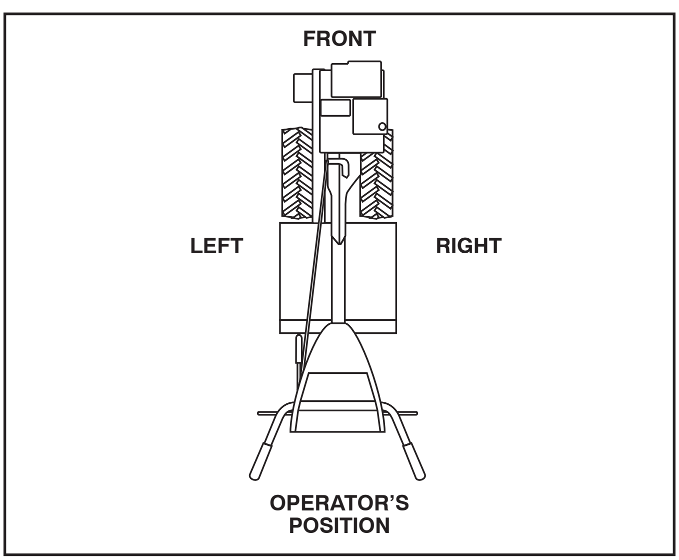


Fig. 1

UNPACKING CARTON (See Fig. 2)

CAUTION: Be careful of exposed staples when handling or disposing of cartoning material.

IMPORTANT: WHEN UNPACKING AND ASSEMBLING TILLER, BE CAREFUL NOT TO STRETCH OR KINK CABLES.

- While holding handle assembly, cut cable ties securing handle assembly to top frame. Let handle assembly rest on tiller.
- Remove top frame of carton.
- Slowly ease handle assembly up and place on top of carton.
- Cut down right hand front and right hand rear corners of carton. Lay side carton wall down.
- Remove packing material from handle assembly.

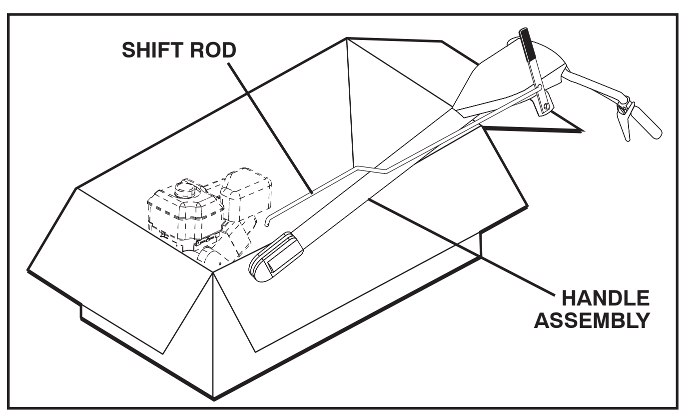


Fig. 2

INSTALL HANDLE (See Figs. 3, 4, and 5)

- Insert one handle lock (with teeth facing outward) in gearcase notch. (Apply grease on smooth side of handle lock to aid in keeping lock in place until handle assembly is lowered into position.)

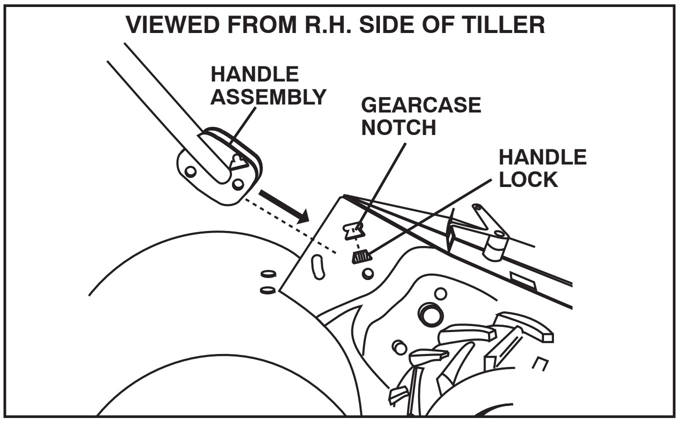


Fig. 3

- Grasp handle assembly. Hold in “up” position. Ensure handle lock remains in gearcase notch. Slide handle assembly into position.

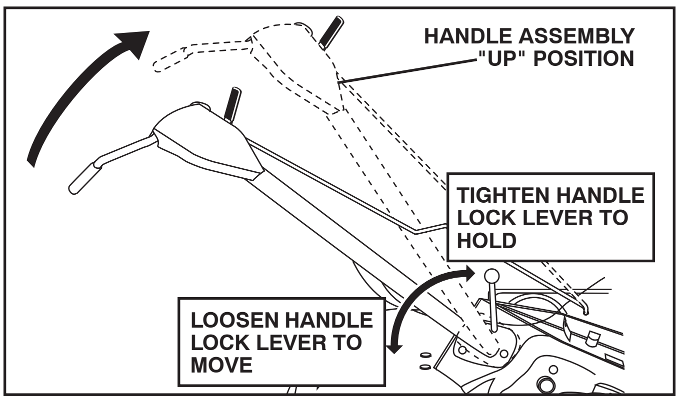


Fig. 4

- Rotate handle assembly down. Insert rear carriage bolt first, with bolt head on L.H. side of tiller and loosely assemble locknut (See Fig. 5).
- Insert pivot bolt in front part of plate and tighten.
- Cut down remaining corners of carton and lay panels flat.
- Lower the handle assembly. Tighten nut on carriage bolt so handle moves with some resistance. This will allow for easier adjustment.
- Place flat washer on threaded end of handle lock lever.
- Insert handle lock lever through handle base and gearcase. Screw in handle lock lever just enough to hold lever in place.
- Insert second handle lock (with teeth inward) in the slot of the handle base (just inside of washer).
- With handle assembly in lowest position, securely tighten handle lock lever by rotating clockwise. Leaving handle assembly in lowest position will make it easier to remove tiller from carton.

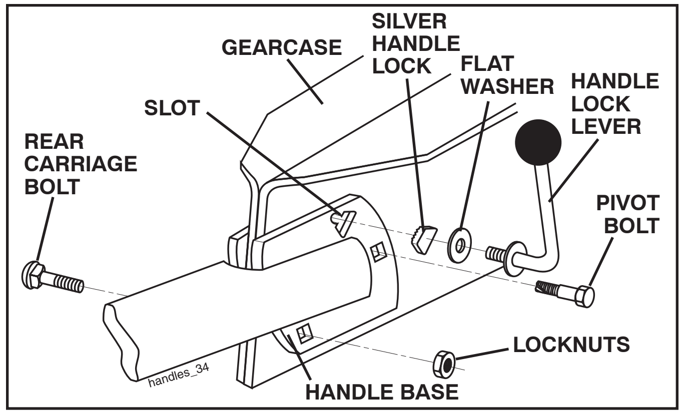


Fig. 5

CONNECT SHIFT ROD (See Fig. 6)

- Insert end of shift rod into hole of shift lever indicator.
- Insert hairpin clip through hole of shift rod to secure with bend of clip on right side.

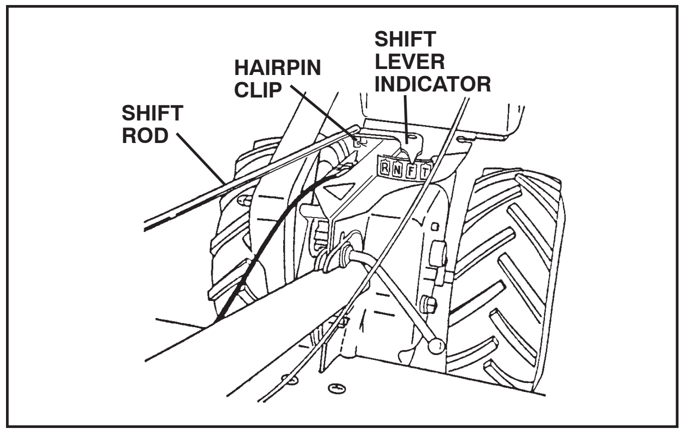


Fig. 6

REMOVE TILLER FROM CRATE

- Ensure shift lever indicator is in “N” position (See Fig. 6).
- Tilt tiller forward by lifting handle. Separate cardboard cover from leveling shield.
- Rotate tiller handle to the right and pull tiller out of carton.

CHECK TIRE PRESSURE

The tires on your unit were overinflated at the factory for shipping purposes. Correct and equal tire pressure is important for best tilling performance.

- Reduce tire pressure to 20 PSI (1.4 kg/cm^2).

HANDLE HEIGHT

- Handle height may be adjusted to better suit operator. (See “TO ADJUST HANDLE HEIGHT” in the Service and Adjustments section of this manual.)

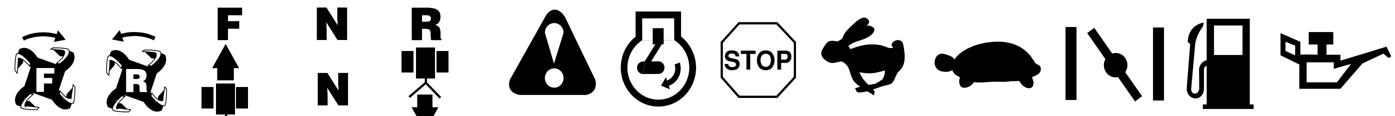
OPERATION

KNOW YOUR TILLER

READ THIS OWNER'S MANUAL AND SAFETY RULES BEFORE OPERATING YOUR TILLER.

Compare the illustrations with your tiller to familiarize yourself with the location of various controls and adjustments. Save this manual for future reference.

These symbols may appear on your Tiller or in literature supplied with the product. Learn and understand their meaning.



TILLING | TILLING | FORWARD | NEUTRAL | REVERSE | CAUTION OR WARNING | ENGINE ON | ENGINE OFF | FAST | SLOW | CHOKE | FUEL | OIL

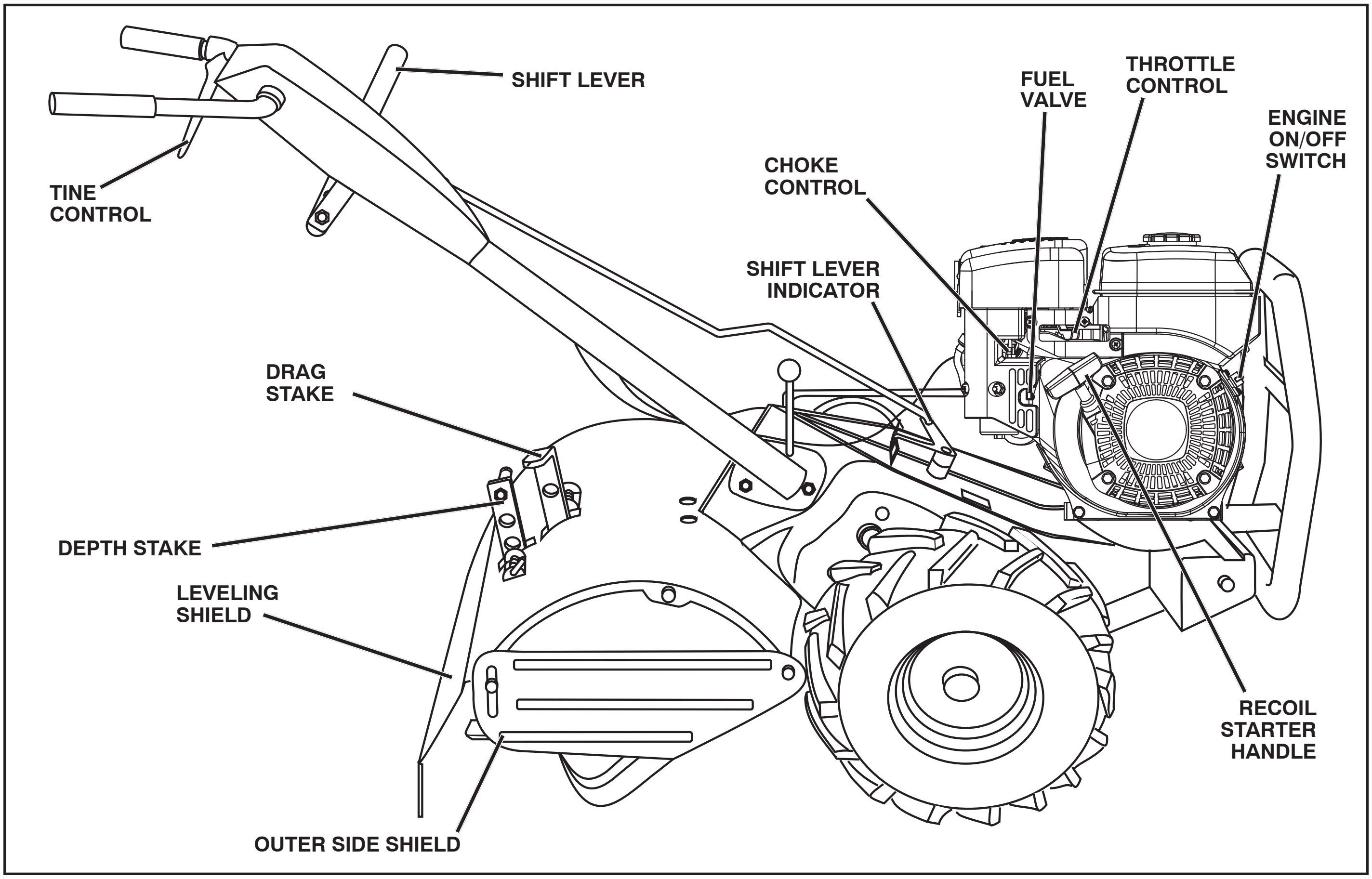


Fig. 7

MEETS ANSI SAFETY REQUIREMENTS

Our tillers conform to the safety standards of the American National Standards Institute.

CHOKE CONTROL - Used when starting a cold engine.

DEPTH STAKE - Controls depth at which tiller will dig.

DRAG STAKE - Controls forward speed in forward rotating till position.

ENGINE ON/OFF SWITCH - The engine switch enables and disables the ignition system.

FUEL VALVE - The fuel valve opens and closes the passage between the fuel tank and the carburetor.

TINE CONTROL - Used to engage tines.

LEVELING SHIELD - Levels tilled soil.

OUTER SIDE SHIELD - Adjustable to protect small plants from being buried.

RECOIL STARTER HANDLE - Used to start the engine.

SHIFT LEVER - Used to shift transmission gears.

SHIFT LEVER INDICATOR - Shows which gear the transmission is in.

THROTTLE CONTROL - Controls engine speed.



The operation of any tiller can result in foreign objects thrown into the eyes, which can result in severe eye damage. Always wear safety glasses or eye shields before starting your tiller and while tilling. We recommend a wide vision safety mask for over spectacles or standard safety glasses.

HOW TO USE YOUR TILLER

Know how to operate all controls before adding fuel and oil or attempting to start engine.

STOPPING (See Fig. 8)

TINES AND DRIVE

1. Release tine control to stop movement.
2. Move shift lever indicator to “N” (neutral) position.

ENGINE

3. Set the speed control lever at the low speed position and allow the engine to run at low speed for 1 or 2 minutes before stopping.
4. Turn the ENGINE SWITCH counterclockwise to the position “ O ” (OFF).
5. Close the fuel valve.
6. Pull the starter handle slowly and return the handle to its original position when resistance is felt. This operation is necessary to prevent outside moist air from intruding into the combustion chamber.

NOTE: Never use choke to stop engine.

IMPORTANT: TO STOP ENGINE IN AN EMERGENCY, TURN THE ENGINE SWITCH TO THE OFF POSITION.

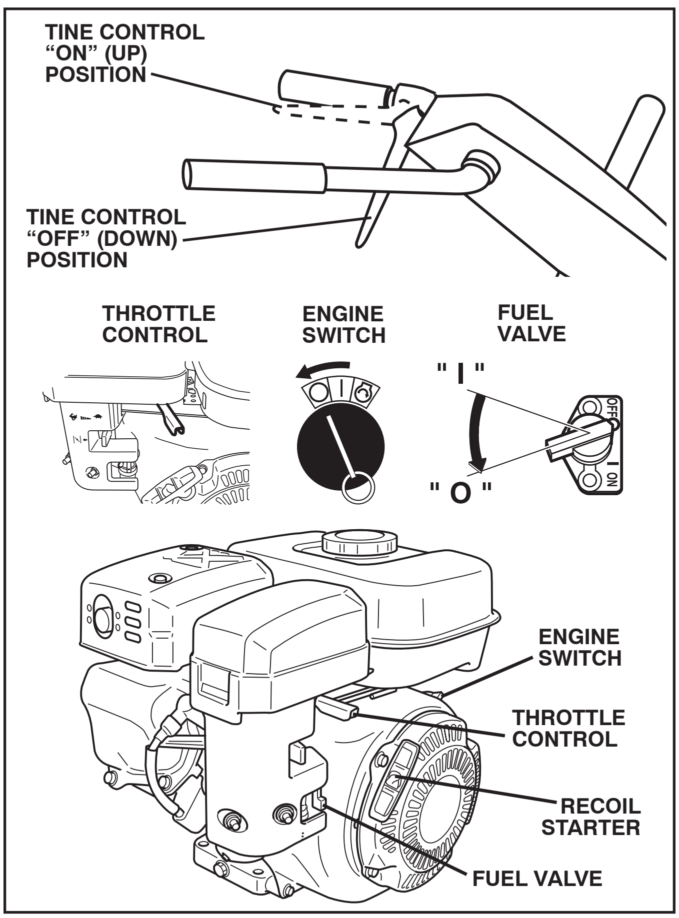


Fig. 8

TINE OPERATION - WITH WHEEL DRIVE

- Always release tine control before moving shift lever into another position.
- Tine movement is achieved by moving shift lever to either the counter rotating () till position or the forward rotating () till position and engaging tine control.

FORWARD - WHEELS ONLY/TINES STOPPED

- Release tine control and move shift lever indicator to “F” (forward) position. Engage tine control and tiller will move forward.

REVERSE - WHEELS ONLY/TINES STOPPED

- DO NOT STAND DIRECTLY BEHIND TILLER.
- Release the tine control.
- Move throttle control to “SLOW” position.
- Move shift lever indicator to “R” (reverse) position.
- Hold tine control against the handle to start tiller movement.

HARD TO SHIFT GEARS

- Briefly engage tine control and release or rock tiller forward and backward until are able to shift gears.

DEPTH STAKE (See Fig. 9)

The depth stake can be raised or lowered to allow you more versatile tilling and cultivating, or to more easily transport your tiller.

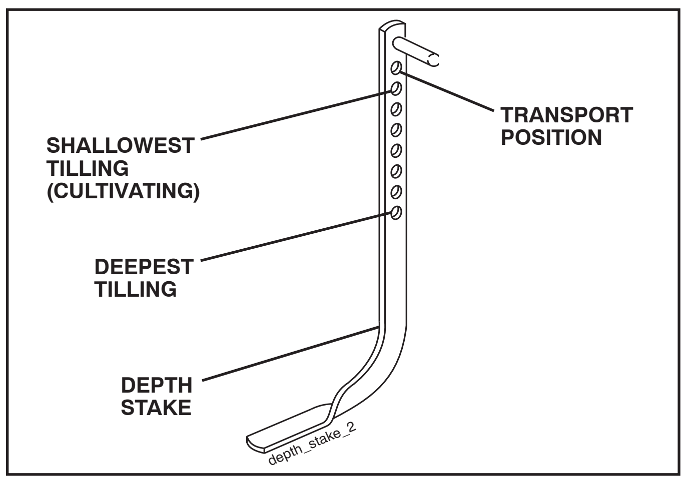


Fig. 9

DRAG STAKE (See Fig. 10)

The drag stake should be raised when tilling in the counter rotating (symbol) till position. The drag stake should be lowered when tilling in the forward rotating (symbol) till position.

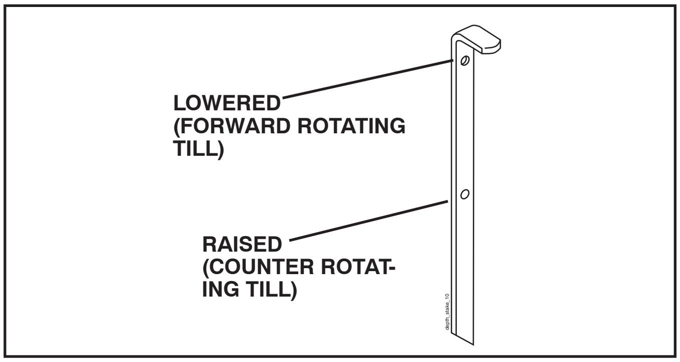


Fig. 10

TILLING (See Fig. 11)

- Release depth stake pin. Pull the depth stake up for increased tilling depth. Place depth stake pin in hole of depth stake to lock in position.
- Place shift lever indicator in counter rotating (symbol) till position .
- Hold the tine control against the handle to start tilling movement. Tines and wheels will both turn.
- Move throttle control to "FAST" position for deep tilling. To cultivate, throttle control can be set at any desired speed, depending on how fast or slow you wish to cultivate.

IMPORTANT: ALWAYS RELEASE TINE CONTROL BEFORE MOVING SHIFT LEVER INTO ANOTHER POSITION.

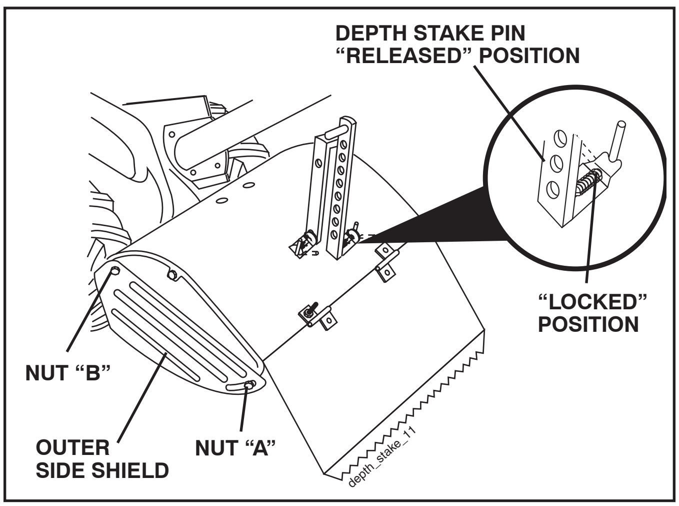


Fig. 11

TURNING

- Release the tine control.
- Move throttle control to "SLOW" position.
- Place shift lever indicator in "F" (forward) position. Tines will not turn.
- Lift handle to raise tines out of ground.
- Swing the handle in the opposite direction you wish to turn, being careful to keep feet and legs away from tines.
- When you have completed your turn-around, release the tine control and lower handle. Place shift lever in (till) position and move throttle control to desired speed. To begin tilling, hold tine control against the handle.

CULTIVATING

- Use the forward rotating tine drive when cultivating, tilling soft ground or tilling pre-tilled soil.
- Release depth and drag stake pins. Lower drag stake. Pull the depth stake up for increased tilling depth. Place proper pin in hole of depth stake or drag stake to lock in position.
- Place shift lever indicator in forward rotating (symbol) till position.
- Hold the tine control against the handle to start tilling movement. Tines and wheels will both turn.
- Move throttle control "FAST" position for deep tilling. To cultivate, throttle control can be set at any desired speed, depending on how fast or slow you wish to cultivate.
- **Always lower the drag stake when using the forward rotating tine drive.**

OUTER SIDE SHIELDS (See Fig. 11)

The back edges of the outer side shields are slotted so that the shields can be raised for deep tilling and lowered for shallow tilling to protect small plants from being buried. Loosen nut "A" in slot and nut "B". Move shield to desired position (both sides). Retighten nuts.

TO TRANSPORT



CAUTION: Before lifting or transporting, allow tiller engine and muffler to cool. Disconnect spark plug wire. Drain gasoline from fuel tank.

AROUND THE YARD

- Release the depth stake pin. Move the depth stake down to the top hole for transporting the tiller. Place depth stake pin in hole of depth stake to lock in position. This prevents tines from scuffing the ground.
- Place shift lever indicator in "F" (forward) position for transporting.
- Hold the tine control against the handle to start tiller movement. Tines will not turn.
- Move throttle control to desired speed.

AROUND TOWN

- Disconnect spark plug wire.
- Drain fuel tank.
- Transport in upright position to prevent oil leakage.

BEFORE STARTING ENGINE

IMPORTANT: BE VERY CAREFUL NOT TO ALLOW DIRT TO ENTER THE ENGINE WHEN CHECKING OR ADDING OIL OR FUEL. USE CLEAN OIL AND FUEL AND STORE IN APPROVED, CLEAN, COVERED CONTAINERS. USE CLEAN FILL FUNNELS.

CHECK ENGINE OIL LEVEL (See Fig. 12)

- The engine in your unit has been shipped, from the factory, already filled with SAE 30 summer weight oil.
- With engine level, clean area around oil filler plug and remove plug.
- Engine oil should be to point of overflowing when engine is level. For approximate capacity see “PRODUCT SPECIFICATIONS” on page 3 of this manual. All oil must meet A.P.I. Service Classification SF-SJ.
- For cold weather operation you should change oil for easier starting (See oil viscosity chart in the Maintenance section of this manual).
- To change engine oil, see the Maintenance section in this manual.

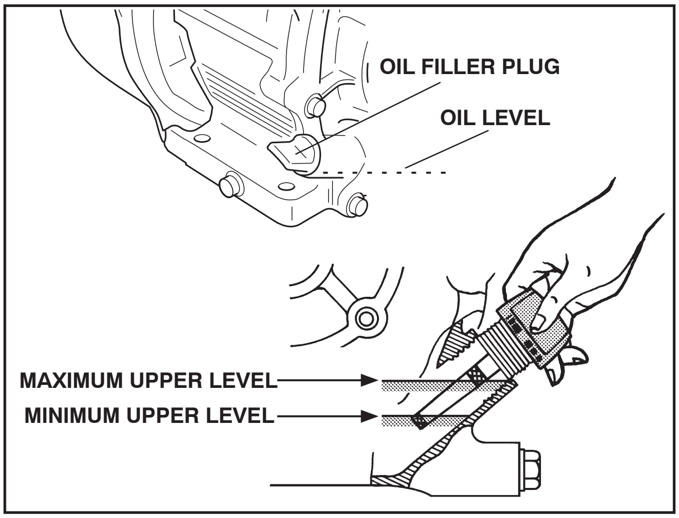


Fig. 12

ADD GASOLINE

- Fill fuel tank to bottom of filler neck. Do not overfill. Use fresh, clean, regular unleaded gasoline with a minimum of 87 octane. (Use of leaded gasoline will increase carbon and lead oxide deposits and reduce valve life.) Do not mix oil with gasoline. Purchase fuel in quantities that can be used within 30 days to assure fuel freshness.

CAUTION: Fill to within 1/2 inch of top of fuel tank to prevent spills and to allow for fuel expansion. If gasoline is accidentally spilled, move machine away from area of spill. Avoid creating any source of ignition until gasoline vapors have disappeared.

Wipe off any spilled oil or fuel. Do not store, spill or use gasoline near an open flame.

IMPORTANT: WHEN OPERATING IN TEMPERATURES BELOW 32°F(0°C), USE FRESH, CLEAN WINTER GRADE GASOLINE TO HELP ENSURE GOOD COLD WEATHER STARTING.

CAUTION: Alcohol blended fuels (called gasohol or using ethanol or methanol) can attract moisture which leads to separation and formation of acids during storage. Acidic gas can damage the fuel system of an engine while in storage. To avoid engine problems, the fuel system should be emptied before storage of 30 days or longer. Drain the gas tank, start the engine and let it run until the fuel lines and carburetor are empty. Use fresh fuel next season. See Storage Instructions for additional information. Never use engine or carburetor cleaner products in the fuel tank or permanent damage may occur.

TO START ENGINE (See Fig. 13)

CAUTION: Keep tine control in “OFF” position when starting engine.

1. Move shift lever indicator to “N” (neutral) position.
2. Open the fuel valve.
3. Turn the ENGINE SWITCH to the position “ I ” (ON).
4. Set the speed control lever 1/3 of the way towards the high speed position.
5. Close the choke lever.

NOTE: If the engine is cold or the ambient temperature is low, close the choke lever fully.

NOTE: If the engine is warm or the ambient temperature is high, open the choke lever half-way, or keep it fully open.

6. Pull the starter handle slowly until resistance is felt. This is the “compression” point. Return the handle to its original position and pull swiftly. Do not pull out the rope all the way. After starting the engine, allow the starter handle to return to its original position while still holding the handle.
7. After starting the engine, gradually open choke by turning the choke lever and finally keep it fully opened. Do not fully open the choke lever immediately when the engine is cold or the ambient temperature is low, because the engine may stop.

NOTE: If engine does not start, see troubleshooting points.

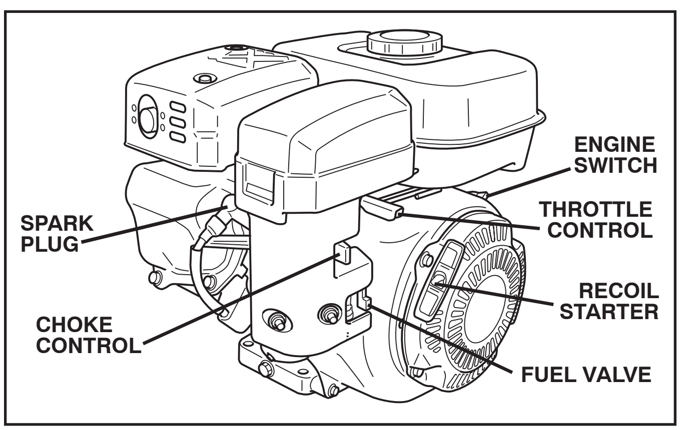


Fig. 13

TILLING HINTS (See Fig. 14)

CAUTION: Until you are accustomed to handling your tiller, start actual field use with throttle in slow position (mid-way between "FAST" and "IDLE").

- Tilling is digging into, turning over, and breaking up packed soil before planting. Loose, unpacked soil helps root growth. Best tilling depth is 4" to 6" (10-15 cm). A tiller will also clear the soil of unwanted vegetation. The decomposition of this vegetable matter enriches the soil. Depending on the climate (rainfall and wind), it may be advisable to till the soil at the end of the growing season to further condition the soil.
- You will find tilling much easier if you leave a row untilled between passes. Then go back between tilled rows. (See Fig. 14) There are two reasons for doing this. First, wide turns are much easier to negotiate than about-faces. Second, the tiller won't be pulling itself, and you, toward the row next to it.
- Soil conditions are important for proper tilling. Tines will not readily penetrate dry, hard soil which may contribute to excessive bounce and difficult handling of your tiller. Hard soil should be moistened before tilling; however, extremely wet soil will "ball-up" or clump during tilling. Wait until the soil is less wet in order to achieve the best results. When tilling in the fall, remove vines and long grass to prevent them from wrapping around the tine shaft and slowing your tilling operation.
- Do not lean on handle. This takes weight off the wheels and reduces traction. To get through a really tough section of sod or hard ground, apply upward pressure on handle or lower the depth stake.

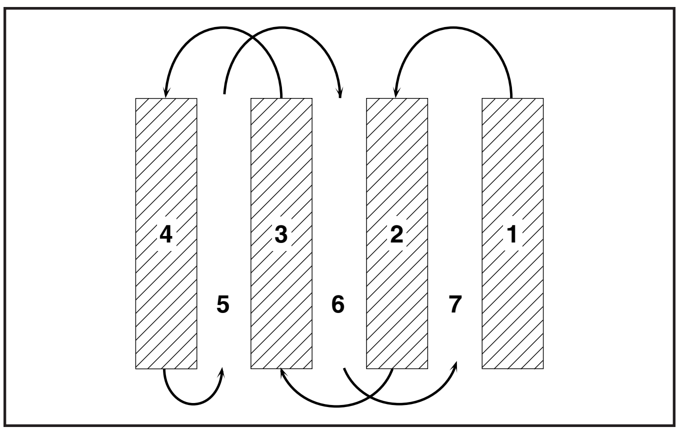


Fig. 14

CULTIVATING

Cultivating is destroying the weeds between rows to prevent them from robbing nourishment and moisture from the plants. At the same time, breaking up the upper layer of soil crust will help retain moisture in the soil. Best digging depth is 1" to 3" (2.5-7.5 cm). Lower the outer side shields to protect small plants from being buried.

- Cultivate up and down the rows at a speed which will allow tines to uproot weeds and leave the ground in rough condition, promoting no further growth of weeds and grass (See Fig. 15).
- Do not lean on handle, this takes weight off the wheels, reduces traction, and may cause the tiller to skip over the ground.
- **Always lower the drag stake when using the forward rotating tine drive.**

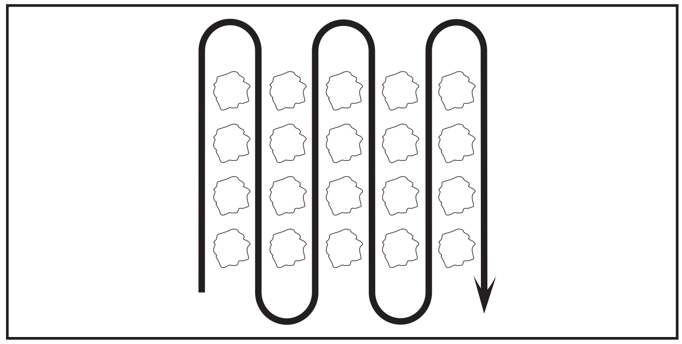


Fig. 15

ADJUST WHEELS FOR CULTIVATING (See Figs. 16 and 17)

- Place blocks under right hand side of tiller and remove hairpin clip and clevis pin from right hand wheel.
- Move wheel outward approximately 1 inch until hole in inner wheel hub lines up with inner hole in axle.
- Replace clevis pin and hairpin clip on inside of wheel and remove blocks.
- Repeat preceding steps on left hand side.

NOTE: In extremely rough conditions and while cultivating, the wheels should be moved outward on the axle for increased stability.

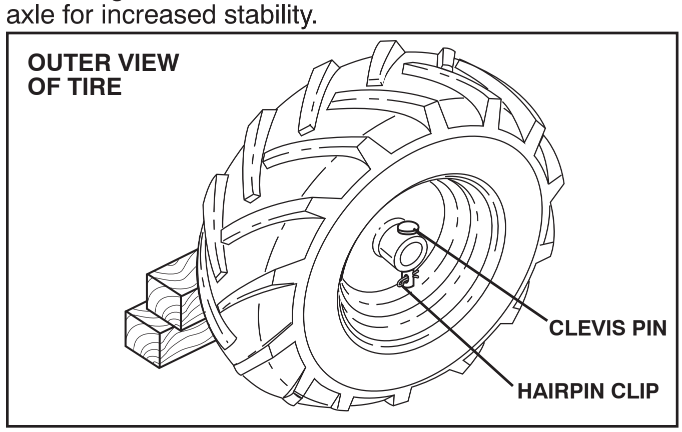


Fig. 16

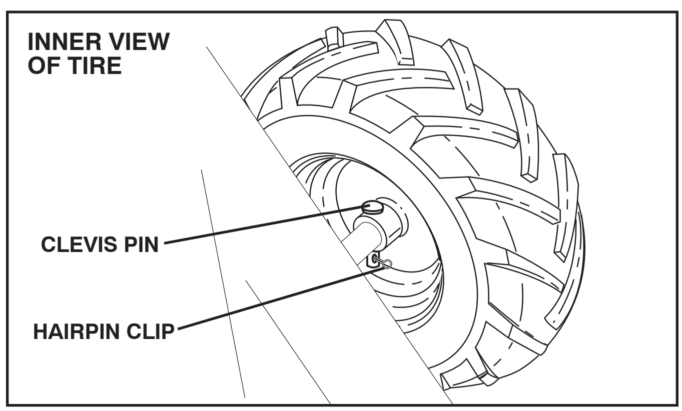


Fig. 17

MAINTENANCE

MAINTENANCE SCHEDULE FILL IN DATES AS YOU COMPLETE REGULAR SERVICE	BEFORE EACH USE	EVERY 5 HOURS	EVERY 20 HOURS	EVERY 50 HOURS	EVERY 200 HOURS	EVERY 500 HOURS	SERVICE DATES							
Check Engine Oil Level	✔	✔												
Change Engine Oil			✔ 3	✔ 1,2										
Oil Pivot Points		✔												
Inspect Spark Arrester / Muffler				✔										
Clean Air Cleaner				✔ 2										
Replace Air Cleaner Cartridge					✔ 2									
Clean Engine Cylinder Fins	✔													
Replace Spark Plug						✔								

1 - Change more often when operating under a heavy load or in high ambient temperatures.
2 - Service more often when operating in dirty or dusty conditions.
3 - Initial oil change should be performed after first twenty (20) hours of operations.

GENERAL RECOMMENDATIONS

The warranty on this tiller does not cover items that have been subjected to operator abuse or negligence. To receive full value from the warranty, the operator must maintain tiller as instructed in this manual.

Some adjustments will need to be made periodically to properly maintain your tiller.

All adjustments in the Service and Adjustments section of this manual should be checked at least once each season.

- Once a year you should replace the spark plug, clean or replace air filter, and check tines and belts for wear. A new spark plug and clean air filter assure proper air-fuel mixture and help your engine run better and last longer.

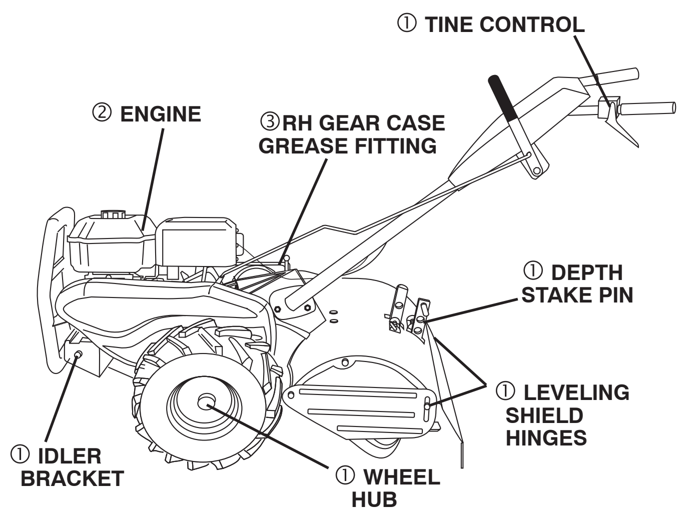
BEFORE EACH USE

- Check engine oil level.
- Check tine operation.
- Check for loose fasteners.

LUBRICATION

Keep unit well lubricated (See “LUBRICATION CHART”).

LUBRICATION CHART



①SAE 30 OR 10W-30 MOTOR OIL
②REFER TO MAINTENANCE “ENGINE” SECTION
③EP #1 GREASE

Disconnect spark plug wire before performing any maintenance (except carburetor adjustment) to prevent accidental starting of engine.

Prevent fires! Keep the engine free of grass, leaves, spilled oil, or fuel. Remove fuel from tank before tipping unit for maintenance. Clean muffler area of all grass, dirt, and debris.

Do not touch hot muffler or cylinder fins as contact may cause burns.

ENGINE

LUBRICATION

Use only high quality detergent oil rated with API service classification SG-SL. Select the oil's SAE viscosity grade according to your expected temperature.

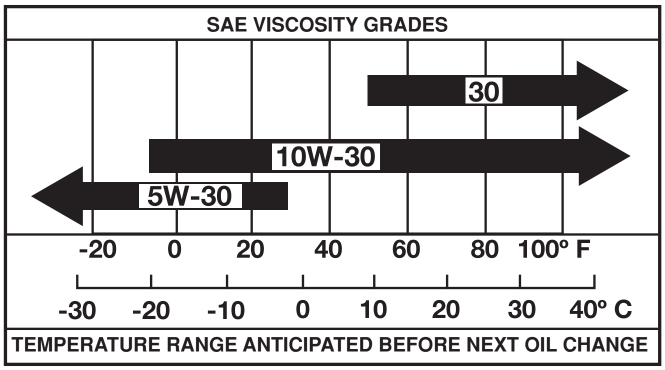


Fig. 18

NOTE: Although multi-viscosity oils (5W-30, 10W-30, etc.) improve starting in cold weather, these multi-viscosity oils will result in increased oil consumption when used above 40°F (4°C). Check your engine oil level more frequently to avoid possible engine damage from running low on oil.

Change the oil after every 25 hours of operation or at least once a year if the tiller is not used for 25 hours in one year.

Check the crankcase oil level before starting the engine and after each five (5) hours of continuous use. Add SAE 30 motor oil or equivalent. Tighten oil filler plug securely each time you check the oil level.

TO CHANGE ENGINE OIL (See Figs. 18 and 19)

- Be sure tiller is on level surface.
- Oil will drain more freely when warm.
- Use a funnel to prevent oil spill on tiller, and catch oil in a suitable container.
- Remove drain plug.

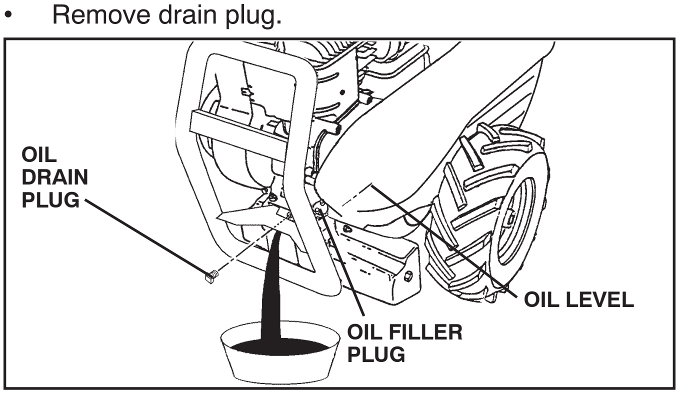


Fig. 19

- For easier removal of plug use 7/16 12 Pt. socket with extension.
- Tip tiller forward to drain oil.
- After oil has drained completely, replace oil drain plug and tighten securely.
- Remove oil filler plug. Be careful not to allow dirt to enter the engine.
- Refill engine with oil. See "CHECK ENGINE OIL LEVEL" in the Operation section of this manual.

CLEANING AIR CLEANER

A dirty air cleaner element will cause starting difficulty, power loss, engine malfunctions, and shorten engine life extremely. Always keep the air cleaner element clean.

DUAL ELEMENT TYPE

- Urethane Foam cleaning (See Fig. 20)

Wash and clean the urethane foam with detergent. After cleaning, dry it. Clean the urethane foam element every 50 hours.

- Second element (See Fig. 20)

Clean by tapping gently to remove dirt and blow off dust. Never use oil. Clean the paper element every 50 hours of operation, and replace element set every 200 hours. Clean and replace air cleaner elements more often when operating in dusty environments.

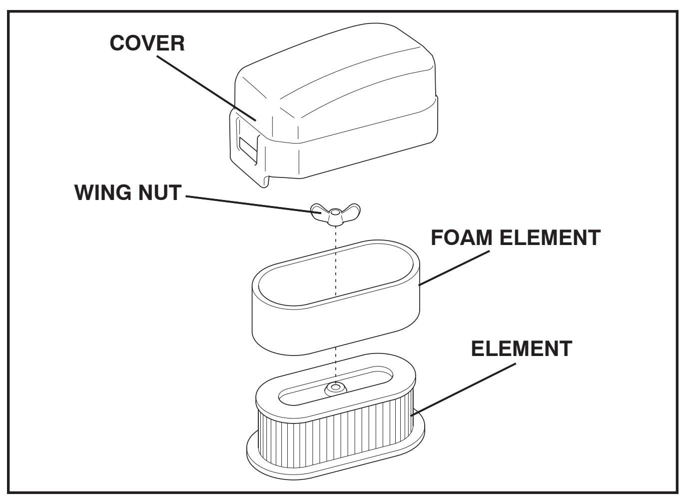


Fig. 20

MUFFLER

Do not operate tiller without muffler. Do not tamper with exhaust system. Damaged mufflers or spark arresters could create a fire hazard. Inspect periodically and replace if necessary. If your engine is equipped with a spark arrester screen assembly, remove every 50 hours for cleaning and inspection. Replace if damaged.

SPARK PLUG

Replace spark plugs at the beginning of each tilling season or after every 50 hours of use, whichever comes first. Spark plug type and gap setting are shown in “PRODUCT SPECIFICATIONS” on page 4 of this manual.

TRANSMISSION

Your transmission is sealed and will not require lubrication unless serviced.

COOLING SYSTEM (See Fig. 21)

Your engine is air cooled. For proper engine performance and long life keep your engine clean.

- Clean air screen frequently using a stiff-bristled brush.
- Remove blower housing and clean as necessary.
- Keep cylinder fins free of dirt and chaff.

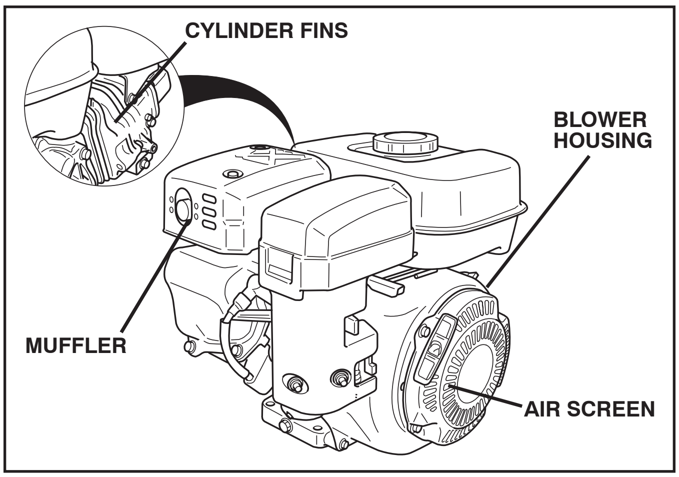


Fig. 21

CLEANING

Do not clean your tiller when the engine and transmission are hot. We do not recommend using pressurized water (garden hose, etc.) to clean your unit unless the gasket area around the transmission and the engine muffler, air filter and carburetor are covered to keep water out. Water in engine will shorten the useful life of your tiller.

- Clean engine, wheels, finish, etc. of all foreign matter.
- Keep finished surfaces and wheels free of all gasoline, oil, etc.
- Protect painted surfaces with automotive type wax.

SERVICE AND ADJUSTMENTS

CAUTION: Disconnect spark plug wire from spark plug and place wire where it cannot come into contact with plug.

TILLER

TO ADJUST HANDLE HEIGHT (See Fig. 23)

Select handle height best suited for your tilling conditions. Handle height will be different when tiller digs into soil.

- First loosen handle lock lever.
- Handle can be positioned at different settings between “HIGH” and “LOW” positions.
- Retighten handle lock lever securely after adjusting.

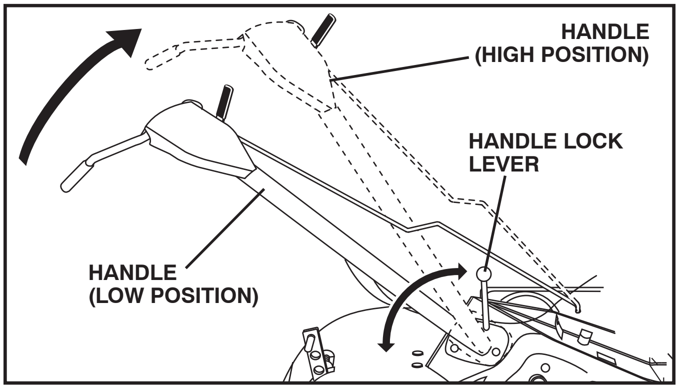


Fig. 23

TIRE CARE

CAUTION: When mounting tires, unless beads are seated, overinflation can cause an explosion.

- Maintain 20 pounds of tire pressure. If tire pressures are not equal, tiller will pull to one side.
- Keep tires free of gasoline or oil which can damage rubber.

TO REMOVE WHEEL (See Fig. 24)

- Place blocks under transmission to keep tiller from tipping.
- Remove hairpin clip and clevis pin from wheel.
- Remove wheel and tire.
- Repair tire and reassemble.

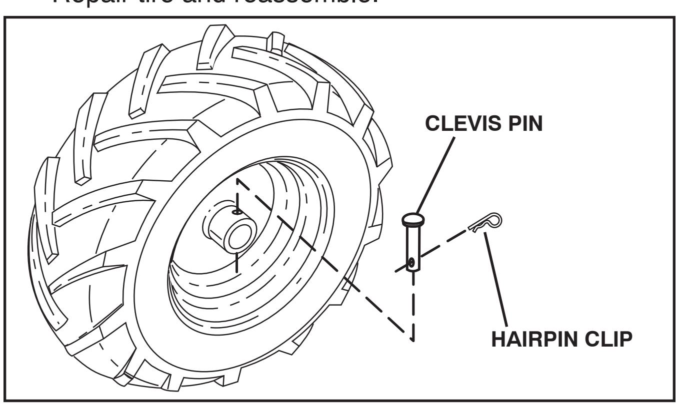


Fig. 24

TO REMOVE BELT GUARD (See Fig. 25)

NOTE: For ease of removal, remove hairpin clip and clevis pin from left wheel. Pull wheel out from tiller about 1 inch.

- Remove two (2) screws from side of belt guard.
- Remove hex nut and washer from bottom of belt guard (located behind wheel).
- Pull belt guard out and away from unit.
- Replace belt guard by reversing above procedure.

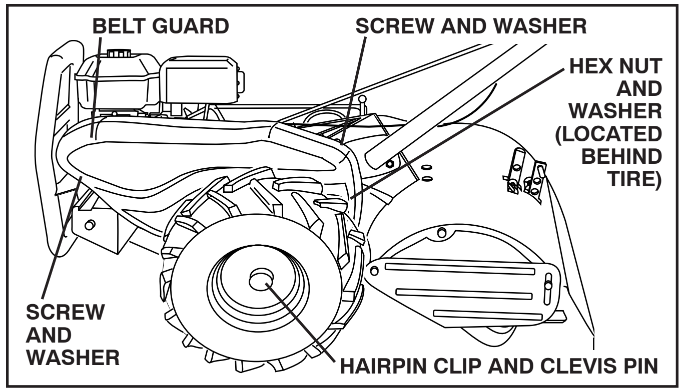


Fig. 25

TO REPLACE GROUND DRIVE BELT (See Figs. 25 and 26)

- Remove belt guard as described in “TO REMOVE BELT GUARD”.
- Remove old belt by slipping off engine pulley first then remove from transmission pulley.
- Place new belt in groove of transmission pulley and into engine pulley. BELT MUST BE IN GROOVE ON TOP OF IDLER PULLEY. NOTE POSITION OF BELT TO GUIDES.
- Check belt adjustment as described below.
- Replace belt guard.
- Reposition wheel and replace clevis pin and hairpin clip.

GROUND DRIVE BELT ADJUSTMENT (See Fig. 26)

For proper belt tension, the extension spring should have about 5/8 inch (16 mm) stretch when Tine control are in “ENGAGED” position. This tension can be attained as follows:

- Loosen cable clip screw securing the drive control cable.
- Slide cable forward for less tension and rearward for more tension until about 5/8 inch (16 mm) stretch is obtained while the Tine control are engaged.
- Tighten cable clip screw securely.

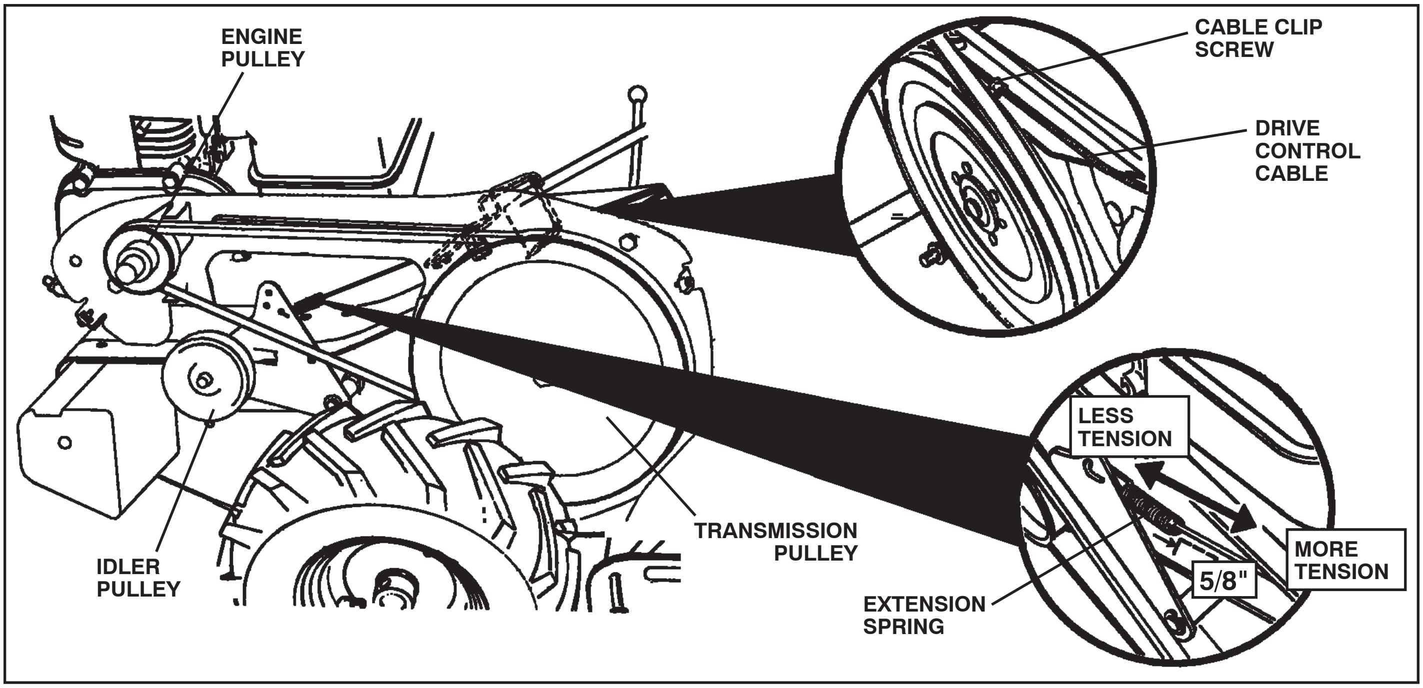


Fig. 26

TINE REPLACEMENT (See Figs. 27, 28 and 29)

CAUTION: Tines are sharp. Wear gloves or other protection when handling tines.

A badly worn tine causes your tiller to work harder and dig more shallow. Most important, worn tines cannot chop and shred organic matter as effectively nor bury it as deeply as good tines. A tine this worn needs to be replaced.

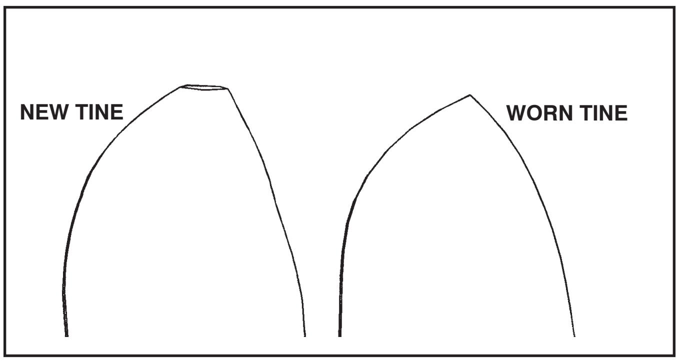


Fig. 27

- To maintain the superb tilling performance of this machine the tines should be checked for sharpness, wear, and bending, particularly the tines which are next to the transmission. If the gap between the tines exceeds 3-1/2 inches they should be replaced or straightened as necessary.
- For tines that are slightly worn, the bolted tine and hub assemblies can be switched between sides to continue tilling in the same tilling mode if tilling in a different mode is desired then the bolted tine and hub assemblies should be switched back to their original side so that the tine edge with the least wear will be used.

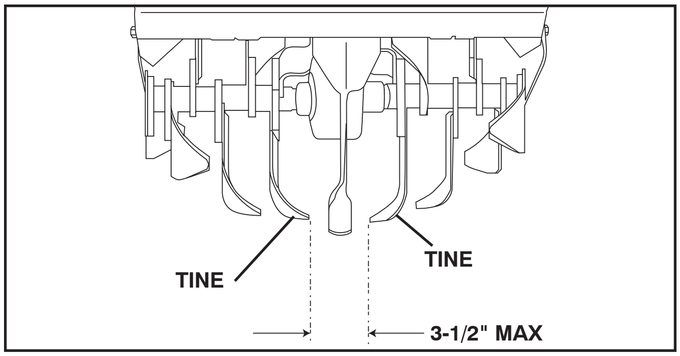


Fig. 28

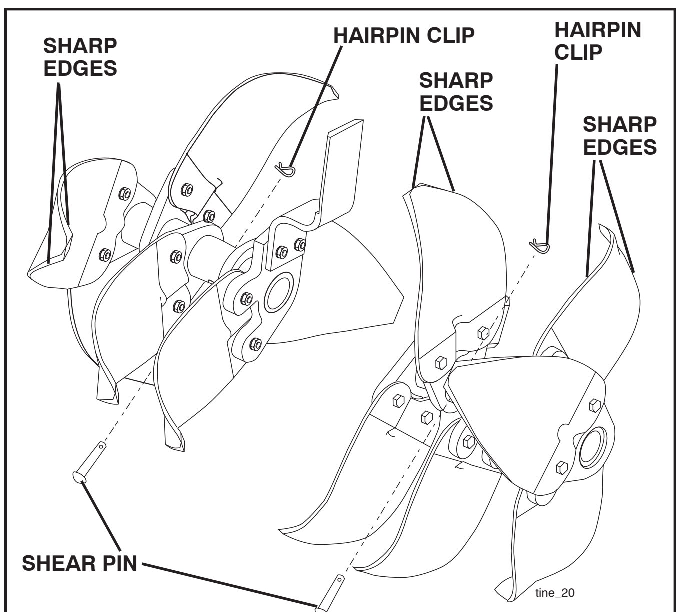


Fig. 29

SERVICE AND ADJUSTMENTS

TO ADJUST CARBURETOR

The carburetor has been preset at the factory and adjustment should not be necessary. However, engine performance can be affected by differences in fuel, temperature, altitude or load. If the carburetor does need adjustment, contact your nearest authorized service center/department

IMPORTANT: NEVER TAMPER WITH THE ENGINE GOVERNOR, WHICH IS FACTORY SET FOR PROPER ENGINE SPEED. OVERSPEEDING THE ENGINE ABOVE THE FACTORY HIGH SPEED SETTING CAN BE DANGEROUS. IF YOU THINK THE ENGINE-GOVERNED HIGH SPEED NEEDS ADJUSTING, CONTACT YOUR NEAREST AUTHORIZED SERVICE CENTER/ DEPARTMENT, WHICH HAS THE PROPER EQUIPMENT AND EXPERIENCE TO MAKE ANY NECESSARY ADJUSTMENTS.

STORAGE

Immediately prepare your tiller for storage at the end of the season or if the unit will not be used for 30 days or more.

CAUTION: Never store the tiller with gasoline in the tank inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.

TILLER

- Clean entire tiller (See "CLEANING" in the Maintenance section of this manual).
- Inspect and replace belts, if necessary (See belt replacement instructions in the Service and Adjustments section of this manual).
- Lubricate as shown in the Maintenance section of this manual.
- Ensure that all nuts, bolts and screws are securely fastened. Inspect moving parts for damage, breakage and wear. Replace if necessary.
- Touch up all rusted or chipped paint surfaces; sand lightly before painting.

ENGINE

FUEL SYSTEM

IMPORTANT: IT IS IMPORTANT TO PREVENT GUM DEPOSITS FROM FORMING IN ESSENTIAL FUEL SYSTEM PARTS SUCH AS THE CARBURETOR, FUEL FILTER, FUEL HOSE, OR TANK DURING STORAGE. ALSO, EXPERIENCE INDICATES THAT ALCOHOL BLENDED FUELS (CALLED GASOHOL OR USING ETHANOL OR METHANOL) CAN ATTRACT MOISTURE WHICH LEADS TO SEPARATION AND FORMATION OF ACIDS DURING STORAGE. ACIDIC GAS CAN DAMAGE THE FUEL SYSTEM OF AN ENGINE WHILE IN STORAGE.

- Empty the fuel tank by starting the engine and let it run until the fuel lines and carburetor are empty.
- Never use engine or carburetor cleaner products in the fuel tank or permanent.
- Use fresh fuel next season.

NOTE: Fuel stablizer is an acceptable alternative in minimizing the formation of fuel gum deposits during storage. Add stabilizer to gasoline in fuel tank or storage container. Always follow the mix ratio found on stablizer container. Run engine at least 10 minutes after adding stablizer to allow the stabilizer to reach the carburetor. Do not empty the gas tank and carburetor if using fuel stabilizer.

ENGINE OIL

Drain oil (with engine warm) and replace with clean oil. (See "ENGINE" in the Maintenance section of this manual).

CYLINDER(S)

- Remove spark plug.
- Pour 1 ounce (29 ml) of oil through spark plug hole into cylinder.
- Pull starter handle slowly several times to distribute oil.
- Replace with new spark plug.

OTHER

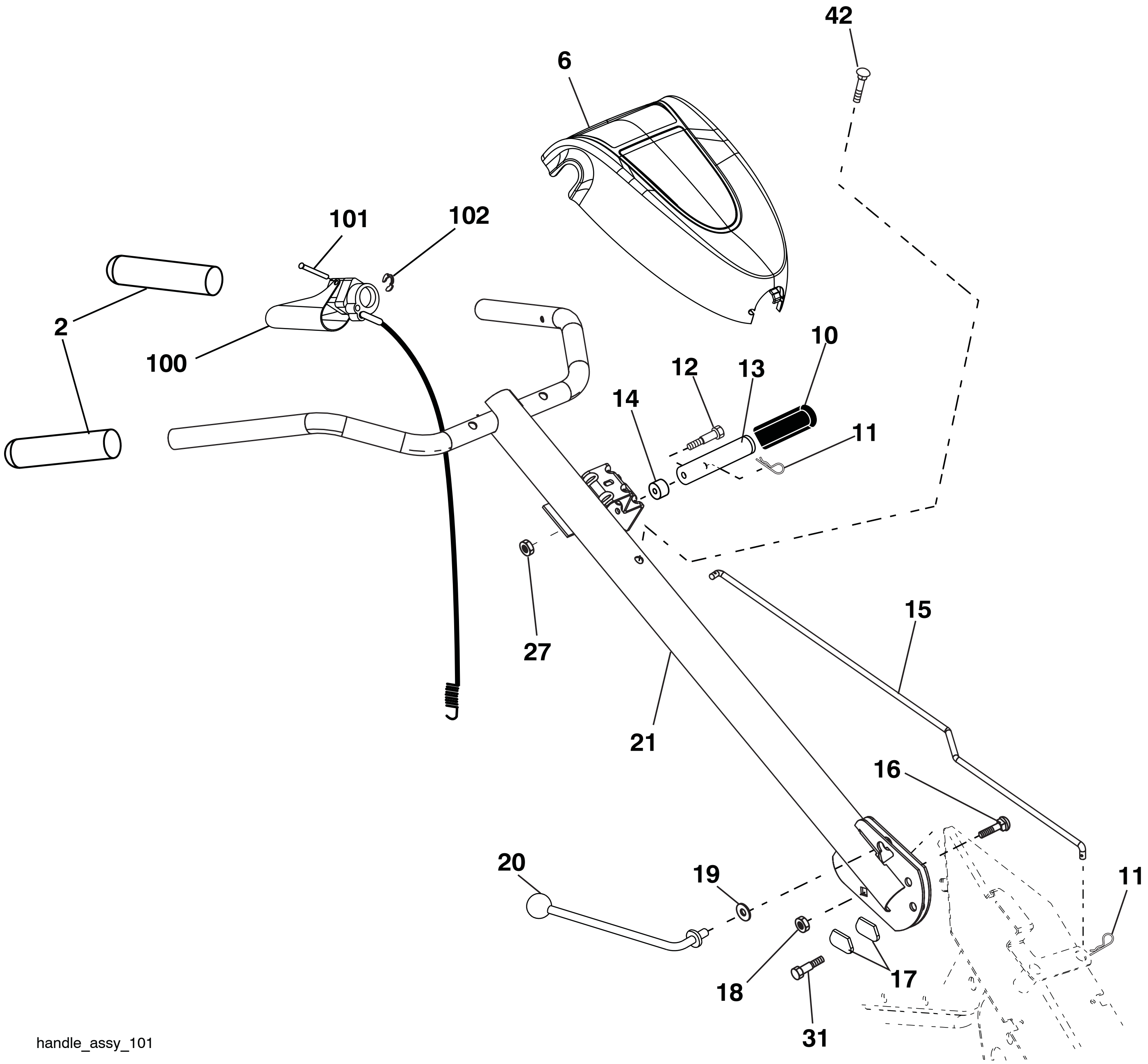
- Do not store gasoline from one season to another.
- Replace your gasoline can if your can starts to rust. Rust and/or dirt in your gasoline will cause problems.
- If possible, store your unit indoors and cover it to give protection from dust and dirt.
- Cover your unit with a suitable protective cover that does not retain moisture. Do not use plastic. Plastic cannot breathe which allows condensation to form and will cause your unit to rust.

IMPORTANT: NEVER COVER TILLER WHILE ENGINE AND EXHAUST AREAS ARE STILL WARM.

TROUBLESHOOTING POINTS

PROBLEM	CAUSE	CORRECTION
Will not start	1. Out of fuel. 2. Engine not “CHOKED” properly. 3. Engine flooded. 4. Dirty air cleaner. 5. Water in fuel. 6. Clogged fuel tank. 7. Loose spark plug wire. 8. Bad spark plug or improper gap. 9. Carburetor out of adjustment.	1. Fill fuel tank. 2. See “TO START ENGINE” in Operation section. 3. Wait several minutes before attempting to start. 4. Clean or replace air cleaner cartridge. 5. Empty fuel tank and carburetor, and refill tank with fresh gasoline. 6. Remove fuel tank and clean. 7. Ensure spark plug wire is seated properly on plug. 8. Replace spark plug or adjust gap. 9. Make necessary adjustments.
Hard to start	1. Throttle control not set properly. 2. Dirty air cleaner. 3. Bad spark plug or improper gap. 4. Stale or dirty fuel. 5. Loose spark plug wire. 6. Carburetor out of adjustment.	1. Place throttle control in “FAST” position. 2. Clean or replace air cleaner cartridge. 3. Replace spark plug or adjust gap. 4. Empty fuel tank and refill tank with fresh, clean gasoline. 5. Ensure spark plug wire is seated properly on plug. 6. Make necessary adjustments.
Loss of power	1. Engine is overloaded. 2. Dirty air cleaner. 3. Low oil level/dirty oil. 4. Faulty spark plug. 5. Oil in fuel. 6. Stale or dirty fuel. 7. Water in fuel. 8. Clogged fuel tank. 9. Spark plug wire loose. 10. Dirty engine air screen. 11. Dirty/clogged muffler. 12. Carburetor out of adjustment. 13. Poor compression.	1. Set depth stake for shallower tilling. 2. Clean or replace air cleaner cartridge. 3. Check oil level/change oil. 4. Clean and regap or change spark plug. 5. Empty and clean fuel tank and refill, and clean carburetor. 6. Empty fuel tank and refill fuel tank with fresh gasoline. 7. Empty fuel tank and carburetor, and refill tank with fresh gasoline. 8. Remove fuel tank and clean. 9. Connect and tighten spark plug wire. 10. Clean engine air screen. 11. Clean/replace muffler. 12. Make necessary adjustments. 13. Contact an authorized service centerdepartment.
Engine overheats	1. Low oil level/dirty oil. 2. Dirty engine air screen. 3. Dirty engine. 4. Partially plugged muffler. 5. Improper carburetor adjustment.	1. Check oil level/change oil. 2. Clean engine air screen. 3. Clean cylinder fins, air screen, and muffler area. 4. Remove and clean muffler. 5. Adjust carburetor to richer position.
Excessive bounce/ difficult handling	1. Ground too dry and hard.	1. Moisten ground or wait for more favorable soil conditions.
Soil balls up or clumps	1. Ground too wet.	1. Wait for more favorable soil conditions.
Engine runs but tiller won’t move	1. Tine control are not engaged. 2. V-belt not correctly adjusted. 3. V-belt is off pulley(s).	1. Engage drive control. 2. Inspect/adjust V-belt. 3. Inspect V-belt.
Engine runs but labors when tilling	1. Tilling too deep. 2. Throttle control not properly adjusted. 3. Carburetor out of adjustment.	1. Set depth stake for shallower tilling. 2. Check throttle control setting. 3. Make necessary adjustments.
Tines will not rotate	1. Shear pin(s) broken.	1. Replace shear pin(s).
Tines skip over ground	1. Drag Stake not lowered in forward rotating till mode. 2. Improper tilling mode.	1. Lower Drag Stake 2. Forward rotating tine drive should only be used for soft ground or for soil that has already been tilled.
Hard to shift into gear	1. Gears not timed.	1. Briefly engage tine control and release or rock tiller forward and backward until are able to shift gears.
Tiller shuts off when tine control engaged	1. Shift lever set in between counter rotating till position and forward rotating till position. 2. Tines jammed.	1. Shift to either counter rotating till position or forward rotating till position. 2. Clear tines.

REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 96096000100)
HANDLE ASSEMBLY

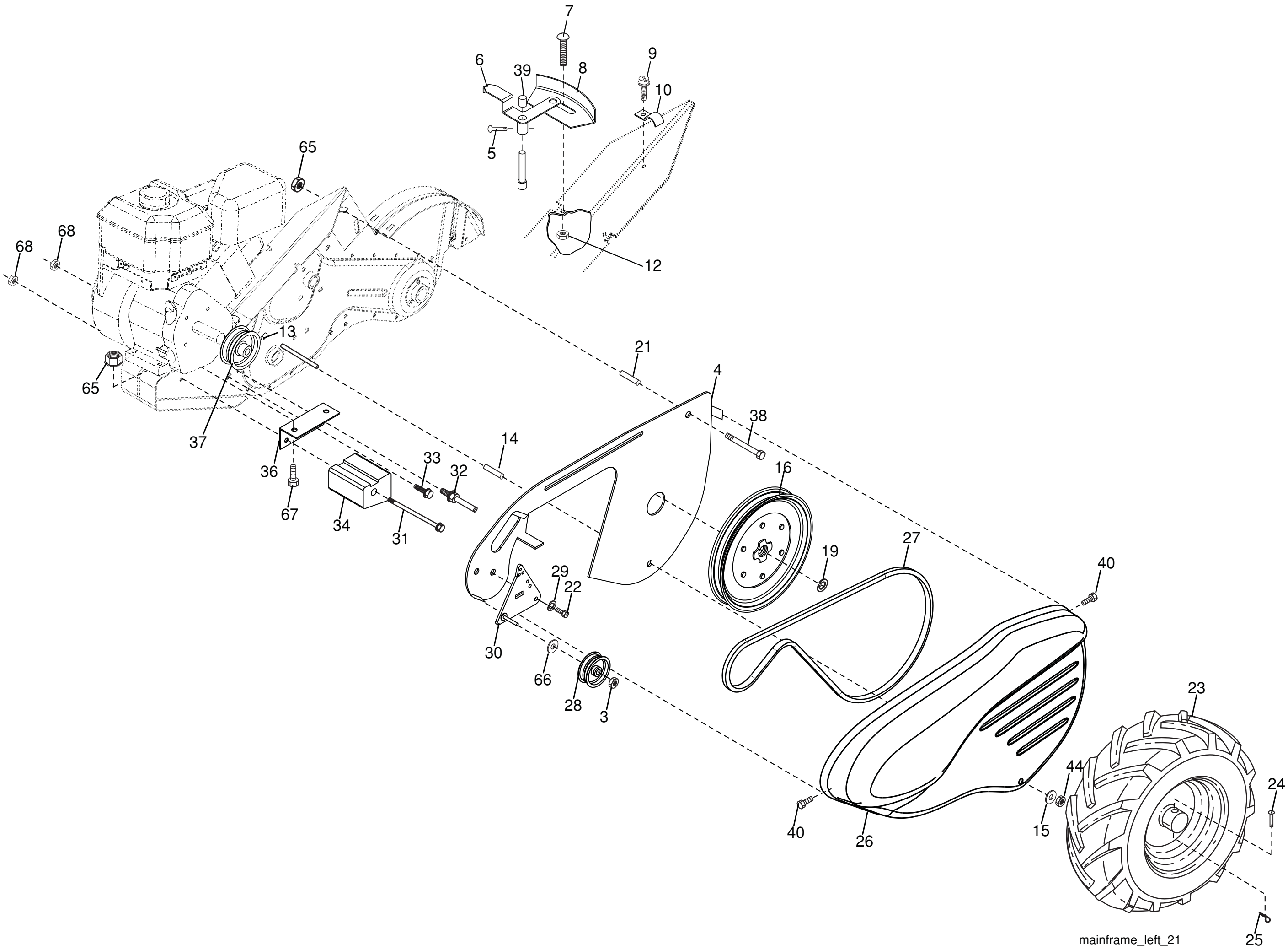


REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 96096000100)
HANDLE ASSEMBLY

ITEM NO.	MFG. NO.	ARIENS PART NO.	DESCRIPTION
2	165787	21546171	Grip, Handle
6	425577	21546735	Console Control
10	8206H	21546825	Handle, Grip
11	4497H	21546739	Retainer Spring
12	81328	21546824	Bolt, Shoulder
13	187497	21546247	Handle, Shift
14	109313X	21546044	Grommet, Rubber
15	138400	21546092	Rod, Shift
16	72110608	21546764	Bolt 3/8-16 x 1 Gr. 5
17	109229X	21546042	Lock, Handle
18	73680600	21546785	Nut, Hex, Crownlock 3/8-16
19	19131611	21546285	Washer 13/32 x 1 x 11 Ga.
20	109228X	21546041	Lever, Lock, Handle
21	193129	21546306	Handle, Assemble
27	73900400	21546788	Nut, Hex Flange 1/4-20 unc
31	150696	21546120	Bolt, Pivot
42	416358	21546675	Screw
100	193133	21546307	Lever
101	188555	21546265	Pin, Pivot
102	12000059	21546059	Retaining Ring

NOTE: All component dimensions given in U.S. inches.
1 inch = 25.4 mm

REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 9609600010)
MAINFRAME, LEFT SIDE

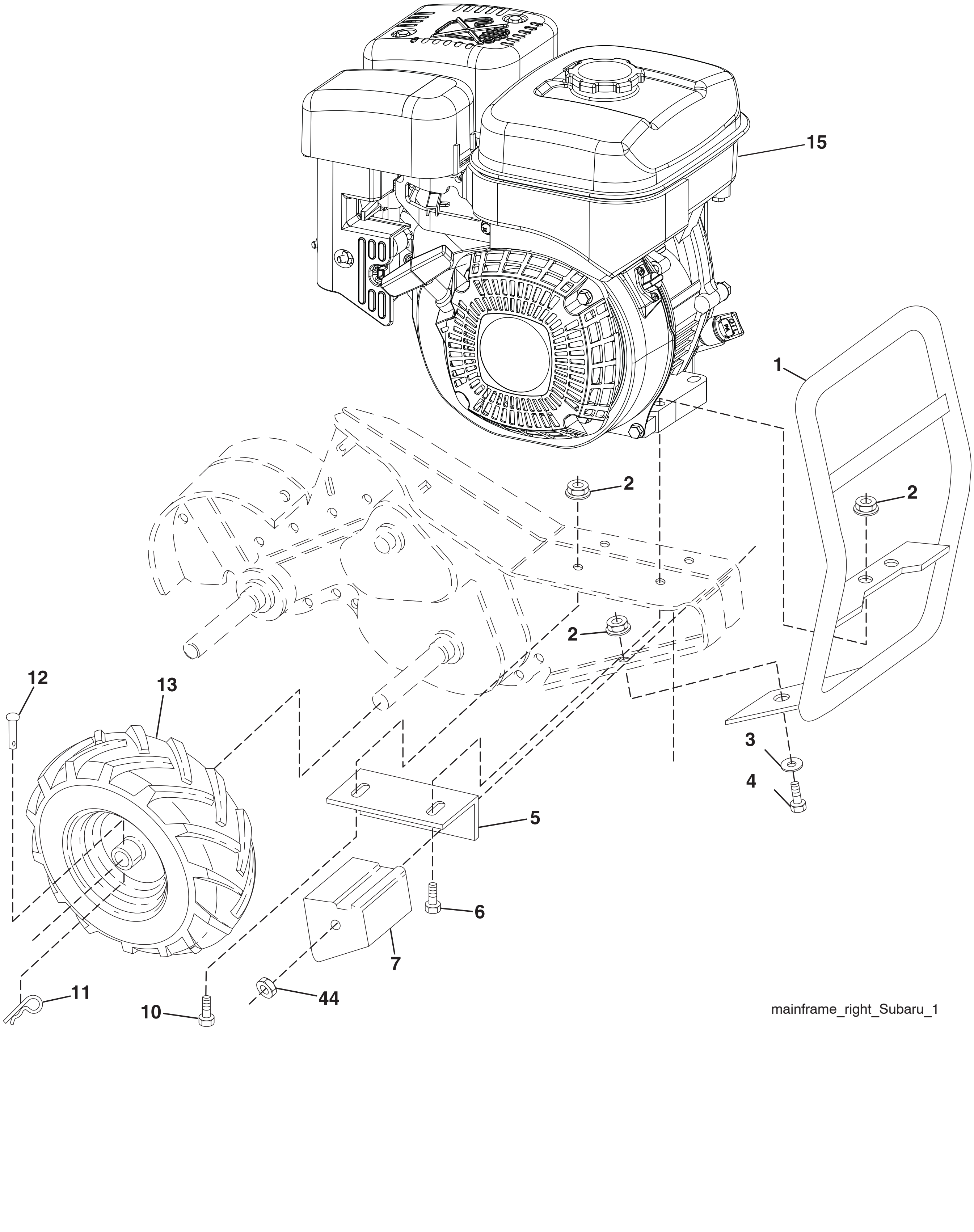


REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 9609600100)
MAINFRAME, LEFT SIDE

ITEM NO.	MFG. NO.	ARIENS PART NO.	DESCRIPTION
3	73220600	21546776	Nut, Hex 3/8-16
4	170127	21546184	Shield, Inner Belt Guard
5	164329	21546166	Pin, Shift Lever
6	162756	21546161	Lever, Shift
7	72110404	21546760	Bolt 1/4-20 unc x 1/2 Gr. 5
8	161530	21546158	Plate, Shift Indicator
9	86777	21546830	Screw, Tap Hex Head
10	9484R	21546839	Clip, Cable
12	73510400	21546779	Nut, Keps Hex 1/4-20 unc
13	23230506	21546545	Screw Set 5/16-18 x 3/8 Patch
14	110652X	21546049	Spacer, Split .327 x .42 x 2.09
15	19111116	21546279	Washer 11/32 x 11/16 x 16 Ga.
16	145102	21546111	Sheave, Transmission
19	12000028	21546052	Ring, Retainer
21	156117	21546135	Spacer, Split .327 x .42 x 1.220
22	74770508	21546813	Bolt, Hex Head 5/16-24 unf x 1/2
23	102190X	21546015	Tire
	183122X428	21546222	Rim
	795R	21546823	Tire Valve
24	126875X	21546078	Rivet, Drilled
25	4497H	21546739	Retainer Spring
26	165501X422	21546168	Guard, Belt
27	132801	21546085	Belt, V
28	104679X	21546022	Pulley, Idler
29	12000032	21546054	Ring, Klip
30	159229	21546143	Bracket, Idler
31	102384X	21546019	Bolt, Hex 5/16-16 x 12
32	102141X	21546012	Shaft, Idler Arm
33	74760616	21546811	Bolt, Hex 3/8-16 x 1
34	102383X	21546018	Counterweight, LH
36	102331X	21546016	Bracket, Reinforcement, LH
37	130812	21546079	Sheave, Engine
38	74760544	21546809	Bolt, Fin Hex 5/16-18 x 2-3/4
39	140062	21546099	Cap, Plunger
40	170488	21546185	Screw Hex Wsh Hd #8-18 x 1/2
44	73800500	21546786	Locknut, Washer Insert 5/16-18
65	73970500	21546796	Nut, Hex, Flangelock
66	19131312	21546283	Washer 13/32 x 13/16 x 12 Ga.
67	74760524	21546807	Bolt, Hex Head, Gr. 25/16-18 x 1-1/2
68	73510600	21546781	Nut Keps Hex 3/8-16 unc

NOTE: All component dimensions given in U.S. inches.
1 inch = 25.4 mm

REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 96096000100)
MAINFRAME, RIGHT SIDE

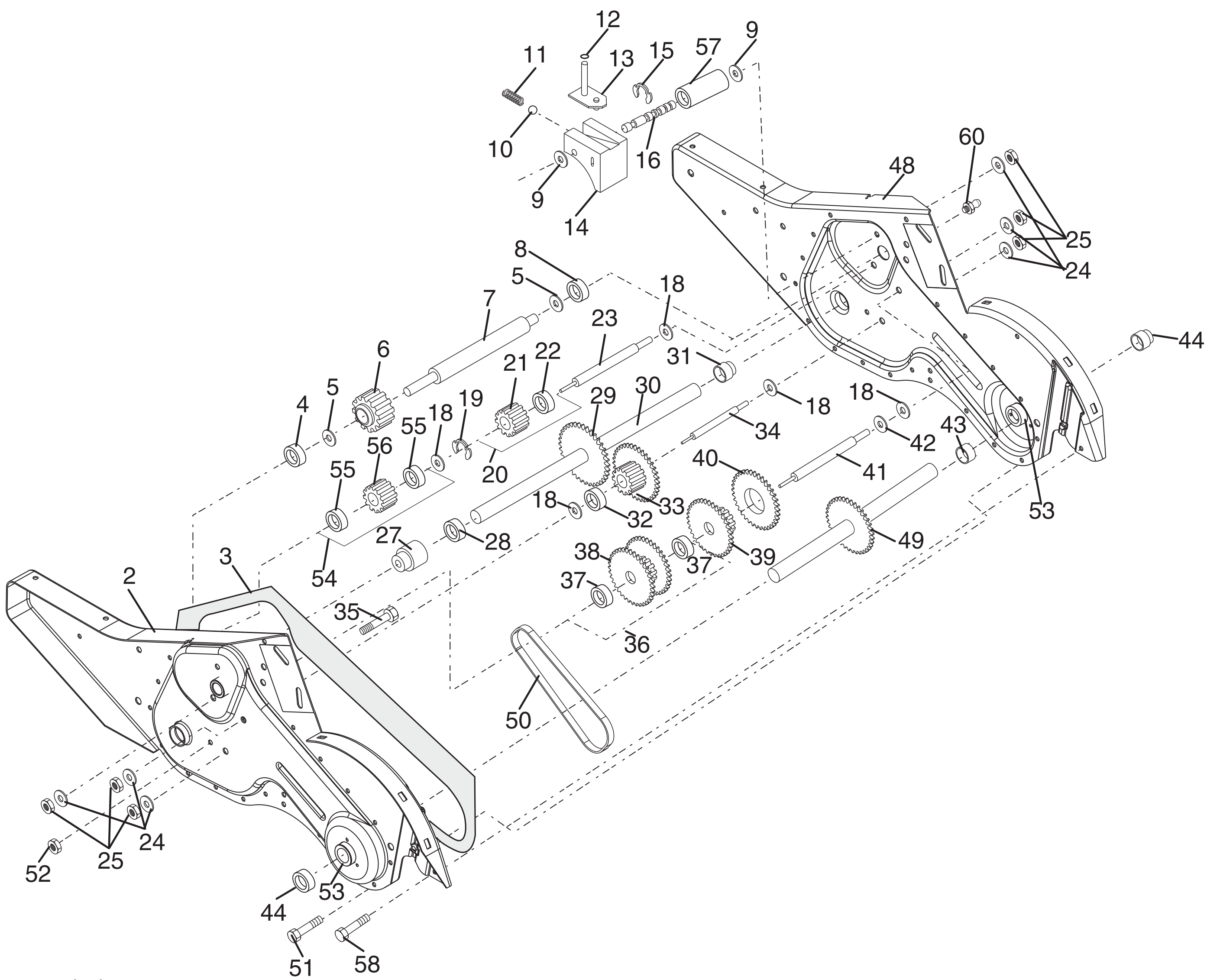


REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 96096000100)
MAINFRAME, RIGHT SIDE

ITEM NO.	MFG. NO.	ARIENS PART NO.	DESCRIPTION
1	185190	21546231	Bumper
2	73970500	21546796	Nut, Hex, Flangelock
3	19111116	21546279	Washer 11/32 x 11/16 x 16 Ga.
4	74760512	21546804	Bolt, Hex Head 5/16-18 x 3/4
5	102332X	21546017	Bracket, Reinforcement
6	74760528	21546808	Bolt, Fin Hex 5/16-18 unc x 1-3/4
7	102173X	21546014	Counter Weight, RH
10	74760524	21546807	Bolt, Hex Head, Gr. 25/16-18 x 1-1/2
11	4497H	21546739	Retainer Spring
12	126875X	21546078	Rivet, Drilled
13	102190X	21546015	Tire
	183122X428	21546222	Rim
	795R	21546823	Tire Valve
15	- - - - - -	- - - - - -	Engine, EX17ODT1030
44	73510600	21546781	Nut Keps Hex 3/8-16 unc

NOTE: All component dimensions given in U.S. inches.
1 inch = 25.4 mm

REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 9609600100)
TRANSMISSION



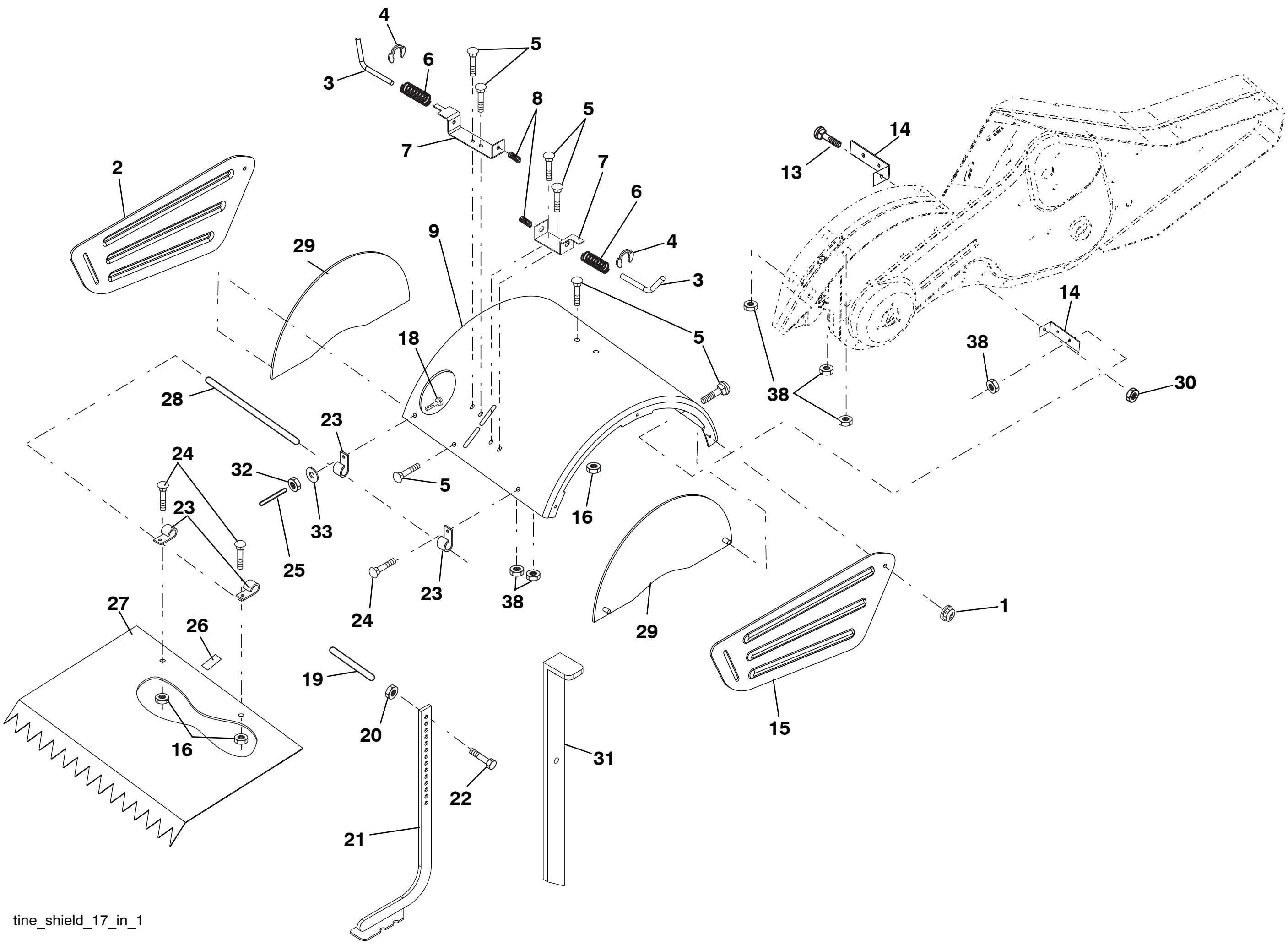
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REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 96096000100)
TRANSMISSION

ITEM NO.	MFG. NO.	ARIENS PART NO.	DESCRIPTION
1	188240	21546259	Transmission Assembly (Includes Key Nos. 2-52)
2	188220	21546257	Gearcase, LH w/Bearing (Includes Key No. 4)
3	161963	21546160	Gasket, Gearcase
4	5020J	21546744	Bearing, Needle
5	1370H	21546088	Washer, Thrust 5/8 x 1.10 x 1/32
6	161520	21546150	Pinion, Input
7	161518	21546149	Shaft, Input
8	4895H	21546740	Bearing, Needle
9	154467	21546130	Washer, Seal
10	7392M	21546792	Ball, Steel
11	100371K	21546000	Spring, Shift, Fork
12	106160X	21546033	O-Ring
13	142145	21546105	Arm, Shift
14	8353J	21546826	Fork, Shift
15	12000039	21546057	Ring, Klip
16	161516	21546148	Shaft, Shift
18	4358J	21546737	Washer
19	12000040	21546058	Ring, Klip
20	102114X	21546008	Gear, Assembly, Reverse Idler (Includes Key Nos. 21 and 22)
21	102115X	21546009	Gear, Reverse Idler
22	6803J	21546753	Bearing, Needle
23	161527	21546155	Shaft, Reverse Idler
24	STD551143	21546843	Washer, Lock 7/16
25	STD541143	21546842	Nut, Hex 7/16-20
27	143009	21546108	Bearing, Shaft, Ground Drive LH
28	106390X	21546036	Spacer 0.765 x 1.125 x 1.23
29	102134X	21546011	Chain #35-50 Pitch
30	150737	21546121	Ground Shaft Assembly
31	143008	21546107	Bearing, Shaft, Ground Drive RH
32	106388X	21546035	Spacer 0.70 x 1.00 x 1.150
33	102121X	21546010	Sprocket and Gear Assembly
34	102112X	21546007	Shaft, Reduction (2nd)
35	102101X	21546006	Screw, Whiz, Lock 5/16-18 x 3-1/2
36	161524	21546152	Sprocket Assembly w/Bearing (Includes Key Nos. 37 and 38)
37	100413K	21546005	Bearing, Needle
38	161525	21546153	Sprocket, Tine
39	161526	21546154	Gear, Cluster, Red 1st & 2nd
40	105346X	21546026	Gear, Reverse
41	161523	21546151	Shaft, Reduction (1st)
42	4220R	21546687	Washer, Thrust
43	106146X	21546031	Spacer 1.01 x 1.75 x 0.760
44	155236	21546133	Seal Asm. Oil
48	188235	21546258	Gearcase, RH w/Bearing (Includes Key No. 8)
49	132688	21546084	Shaft, Tine
50	106147X	21546032	Chain, Roller #50-50 Pitch
51	17720408	21546210	Screw 1/4-20 x 1/2
52	73220500	21546775	Nut, Hex 5/16-18
53	165140	21546167	Bearing Kit, Tine Shaft
54	161528	21546156	Gear, DRT Idler w/Bearing (Includes Key No. 55)
55	3400R	21546551	Bearing, Needle
56	161529	21546157	Gear, DRT Idler
57	165889	21546173	Spacer, Split .52 x .64 x 1.04
58	179520	21546215	Screw 1/4-20 x .875
60	183226	21546223	Fitting Grease
- -	6066J	21546749	Grease, Plastilube #1

NOTE: All component dimensions given in U.S. inches.
1 inch = 25.4 mm

REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 96096000100)
TINE SHIELD



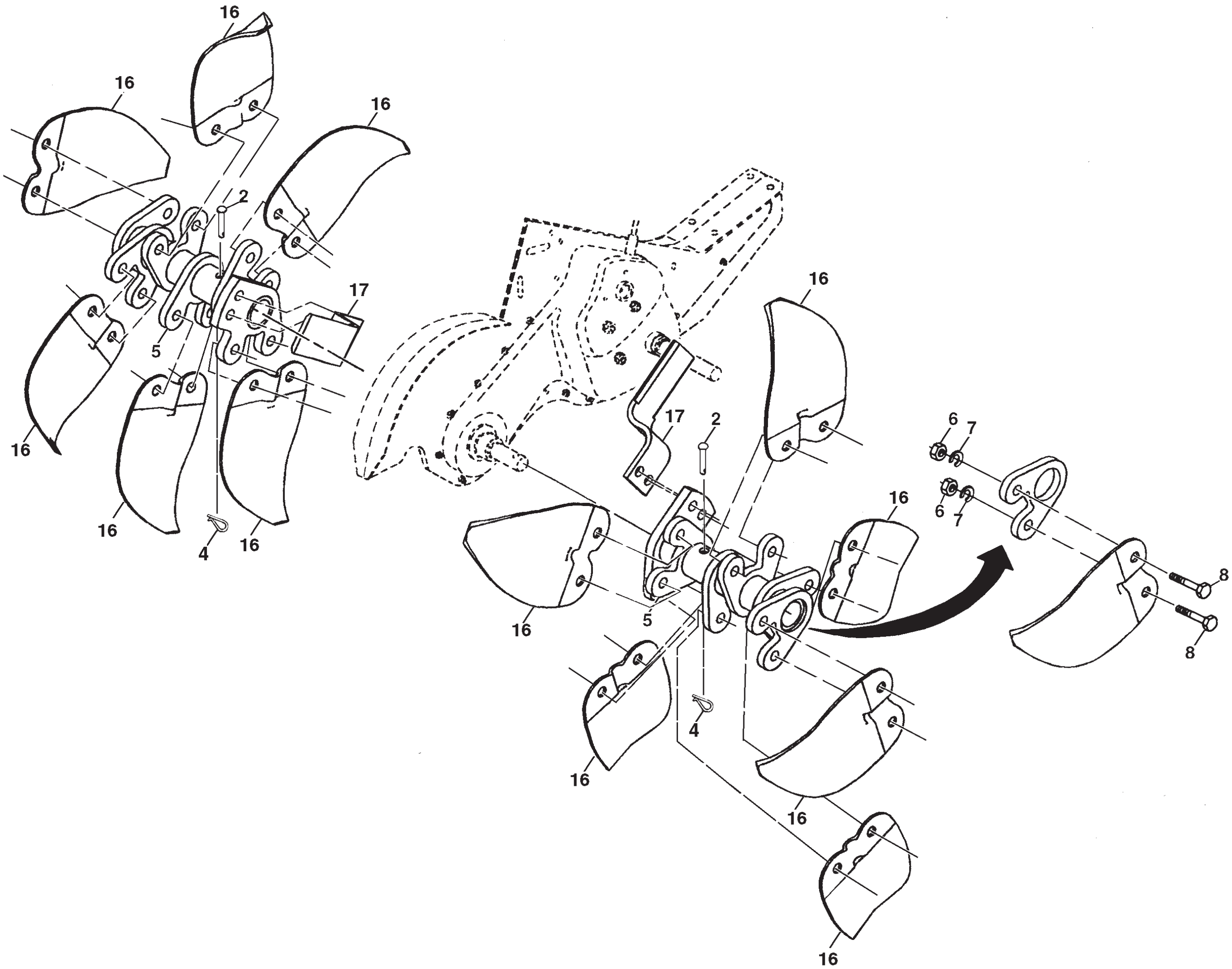
tine_shield_17_in_1

REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 9609600100)
TINE SHIELD

ITEM NO.	MFG. NO.	ARIENS PART NO.	DESCRIPTION
1	73900500	21546789	Nut, Lock Hex Flange 5/16-18 unc
2	161415X422	21546147	Shield, Side, Outer L. H.
3	8393J	21546828	Pin, Stake, Depth
4	12000035	21546055	Ring, Klip
5	180847	21546218	Bolt, Carriage, Gr. 5 5/16-18 x 3/4
6	8394J	21546829	Spring
7	8392J	21546827	Bracket, Latch
8	109230X	21546043	Spring, Depth Stake
9	188862X422	21546271	Shield, Tine
13	72110510	21546763	Bolt, Carriage 5/16-18 x 1-1/4
14	124343X	21546075	Bracket, Shield Tine
15	161414X422	21546146	Shield, Side, Outer RH
16	73900400	21546788	Nut, Hex Flange 1/4-20 unc
18	72040410	21546758	Bolt, Carriage 1/4-20 x 1-1/4 Gr. 5
19	102701X	21546021	Grip
20	73220600	21546776	Nut, Hex 3/8-16
21	102156X	21546013	Stake, Depth
22	74930632	21546819	Bolt, Hex 3/8-16 x 2
23	4440J	21546738	Hinge
24	72140404	21546769	Bolt, Carriage 1/4-20 x 1/2
25	6712J	21546752	Cap, Vinyl
26	109227X	21546040	Pad, Idler
27	102695X422	21546020	Shield, Leveling
28	120588X	21546062	Pin, Hinge
29	197761X422	21546455	Shield, Side
30	73970500	21546796	Nut, Hex, Flangelock
31	163498X613	21546163	Stake, Drag
32	73220400	21546774	Nut, Fin, Hex 1/4-20 unc
33	10040400	21546001	Washer, Lock 1/4
38	73510500	21546780	Nut, Keps 5/16-18 unc

NOTE: All component dimensions given in U.S. inches.
1 inch = 25.4 mm

REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 96096000100)
TINE ASSEMBLY

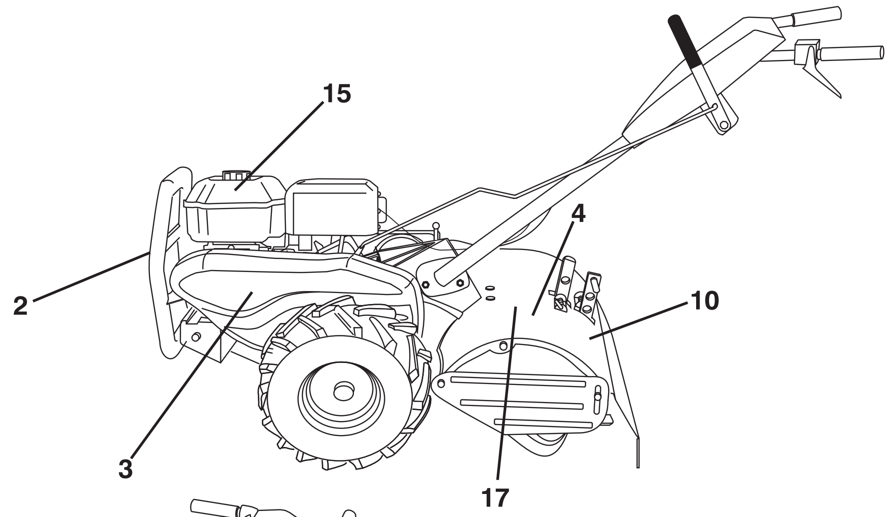


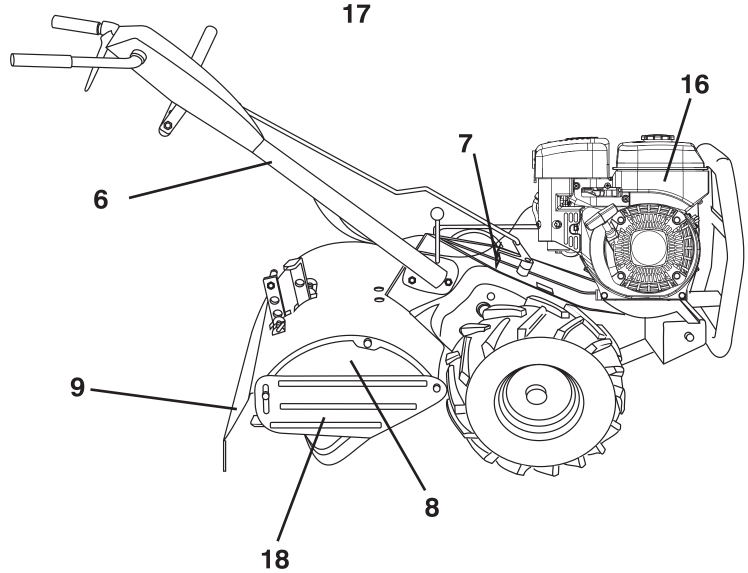
REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 96096000100)
TINE ASSEMBLY

ITEM NO.	MFG. NO.	ARIENS PART NO.	DESCRIPTION
2	132673	21546083	Pin, Shear
4	3146R	21546548	Retainer, Spring
5	188845	21546270	Tine Assembly
6	73610600	21546783	Nut, Hex 3/8-24
7	10040600	21546003	Washer, Lock 3/8
8	74610616	21546802	Bolt, Hex 3/8-24 x 1
16	163499	21546164	Tine, Spade
17	163500	21546165	Tine, Cleaning

NOTE: All component dimensions given in U.S. inches.
1 inch = 25.4 mm

REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 96096000100)
DECALS





REAR TINE TILLER - MODEL NUMBER 90102800 (MFG. ID. NO. 96096000100)
DECALS

ITEM NO.	MFG. NO.	ARIENS PART NO.	DESCRIPTION
2	423701	21546713	Decal, Subaru Tine Shield
3	423700	21546712	Decal, Belt Guard
4	401384	21546573	Decal, Tine Shield Forward
6	110614X	21546048	Decal, Hand Placement
7	166202	21546174	Decal, Shift Indicator
8	422816	21546695	Decal, Flag
9	176782	21546209	Decal, Warning, DRT
10	401383	21546572	Decal, Tine Shield DRT REV
15	423830	21546720	Decal, Ethonal
16	424120	21546728	Decal, Warning Spark Arrester
17	423703	21546715	Decal, Top Dual
18	423704	21546716	Decal, Side
- -	427490		Manual, Owner’s (Eng/Fr)
- -	426046		Manual, Owner’s (Spanish)

NOTE: All component dimensions given in U.S. inches.
1 inch = 25.4 mm

Two-Year Limited Tiller Warranty

This warranty statement applies only to Tillers.

Ariens Company (Ariens) warrants to the **original purchaser** that Ariens brand consumer tillers will be free from defects in material and workmanship for a period of two years after the date of purchase. An authorized Ariens dealer will repair any defect in material or workmanship, and repair or replace any defective part, subject to the conditions, limitations and exclusions set forth herein. Such repair or replacement will be free of charge (labor and parts) to the original purchaser except as noted below.

90-Day Limited Warranty on Service Parts and Accessories

Genuine Ariens brand service parts and accessories are warranted to be free from defects in material and workmanship for a period of 90 days after the date of purchase. An authorized Ariens dealer will repair or replace any such part or accessory free of charge, except for labor, during that period.

The duration of all warranties herein applies only if the product is put to personal use around a household or residence. If the product is put to any business use, agricultural, commercial, or industrial, then the duration of these warranties shall be 90 days after the date of purchase. If any product is rented or leased, then the duration of these warranties shall be 90 days after the date of purchase.

Exceptions, Limitations, Exclusions

Customer Responsibilities

Register the product immediately at the time of sale. If the dealer does not register the product, the customer must complete the product registration card in the literature package and return it to the Ariens Company, or register the unit online at www.ariens.com.

To obtain warranty service, the **original purchaser** must:

- Perform the maintenance and minor adjustments explained in the owner's manual.
- Promptly notify Ariens or an authorized Ariens service representative of the need for warranty service.
- Transport the product to and from the place of warranty service.
- Have the warranty service performed by an authorized Ariens service representative.

To find an Ariens authorized service representative, contact Ariens at:

655 W. Ryan Street
Brillion, WI 54110
(800) 317 - 5898
(920) 756 - 2141
www.ariens.com

Exceptions and Limitations

- Batteries are warranted only for a period of 12 months after date of purchase, on a prorated basis. For the first 90 days of the warranty period, a defective battery will be replaced free of charge. If the applicable warranty period is more than 90 days, Ariens will cover the prorated cost of any defective battery, for up to 12 months after the date of purchase.

Exclusions – Items Not Covered by This Warranty

- Engines and engine accessories are covered only by the engine manufacturer's warranty and are not covered by this warranty.
- Parts that are not genuine Ariens service parts are not covered by this warranty.
- The following maintenance, service and replacement items are not covered by this warranty unless they are noted in the Limitations section above: lubricants, spark plugs, oil, oil filters, air filters, fuel filters, brake linings, brake arms, shoes, runners, scraper blades, shear bolts, mower blades, mower vanes, tines, brushes, headlights, light bulbs, knives, cutters.
- Any misuse, alteration, improper assembly, improper adjustment, neglect, or accident which requires repair is not covered by this warranty.
- This warranty applies only to products purchased in the United States (including Puerto Rico) and Canada. In all other countries, contact place of purchase for warranty information.

Disclaimer

Ariens may from time to time change the design of its products. Nothing contained in this warranty shall be construed as obligating Ariens to incorporate such design changes into previously manufactured products, nor shall such changes be construed as an admission that previous designs were defective.

LIMITATION OF REMEDY AND DAMAGES

Ariens Company's liability under this warranty, and under any implied warranty that may exist, is limited to repair of any defect in workmanship, and repair or replacement of any defective part. Ariens shall not be liable for incidental, special, or consequential damages (including lost profits). Some states do not allow the exclusion of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

DISCLAIMER OF FURTHER WARRANTY

Ariens Company makes no warranty, express or implied, other than what is expressly made in this warranty. If the law of your state provides that an implied warranty of merchantability, or an implied warranty of fitness for particular purpose, or any other implied warranty, applies to Ariens Company, then any such implied warranty is limited to the duration of this warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Ariens Company
655 West Ryan Street
Brillion, WI 54110-1072
800-317-5898
www.ariens.com

PARTS AND SERVICE

This product has been expertly engineered and carefully manufactured to rigid quality standards. As with all mechanical products, some adjustments or part replacement may be necessary during the life of your unit.

For parts and service, contact your local Ariens dealer. To find a dealer in your area, call 1-800-317-5898, or use the Dealer Locator on our web site, www.ariens.com.

- For replacement parts, have available the following information:
  a. Model Number/Manufacturer's I.D. Number.
  b. Description of part.

For Technical Assistance: call 1-800-317-5898.

For a Parts Manual, go to our website: www.ariens.com/customerservice/default.aspx

WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.